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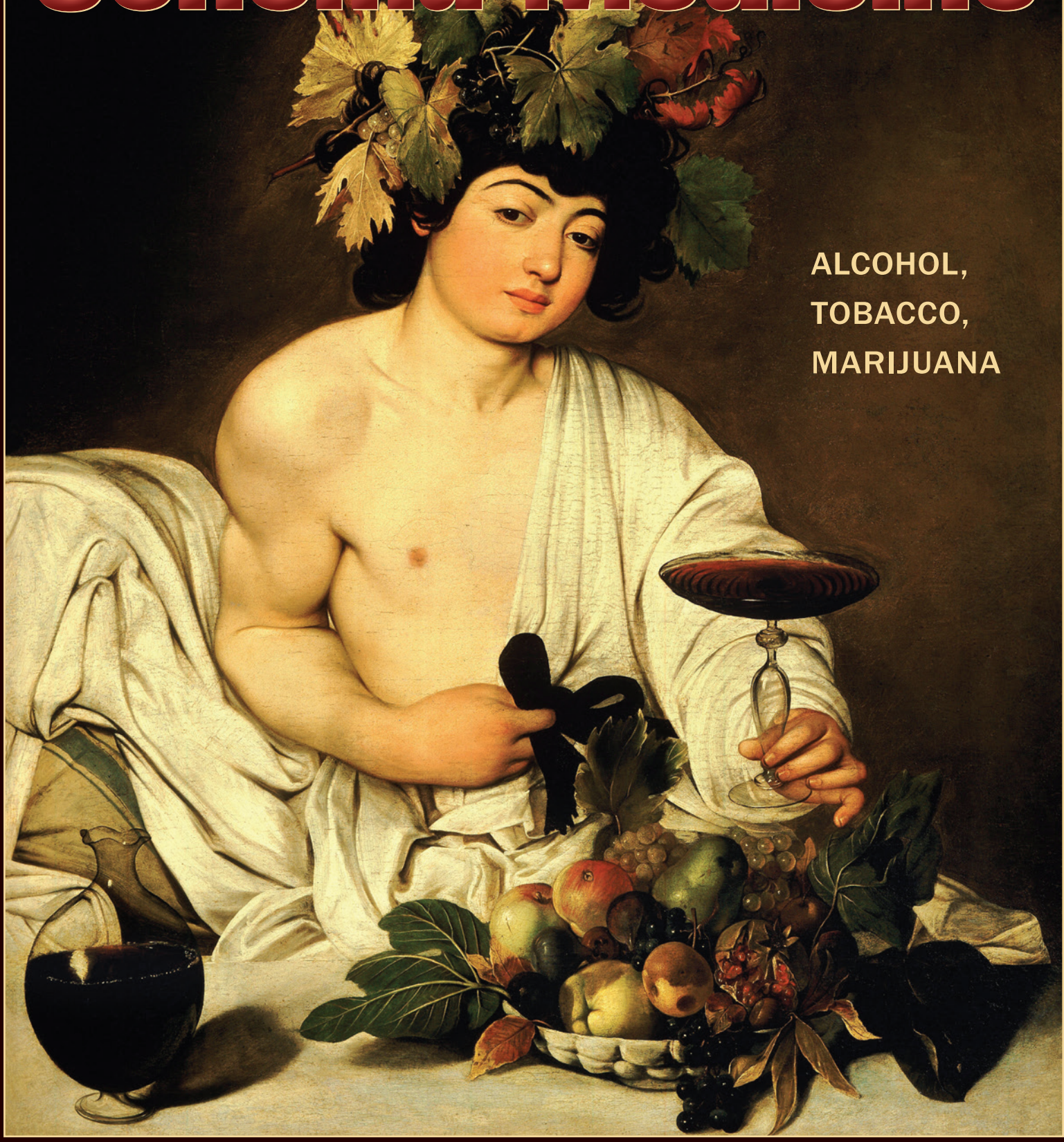

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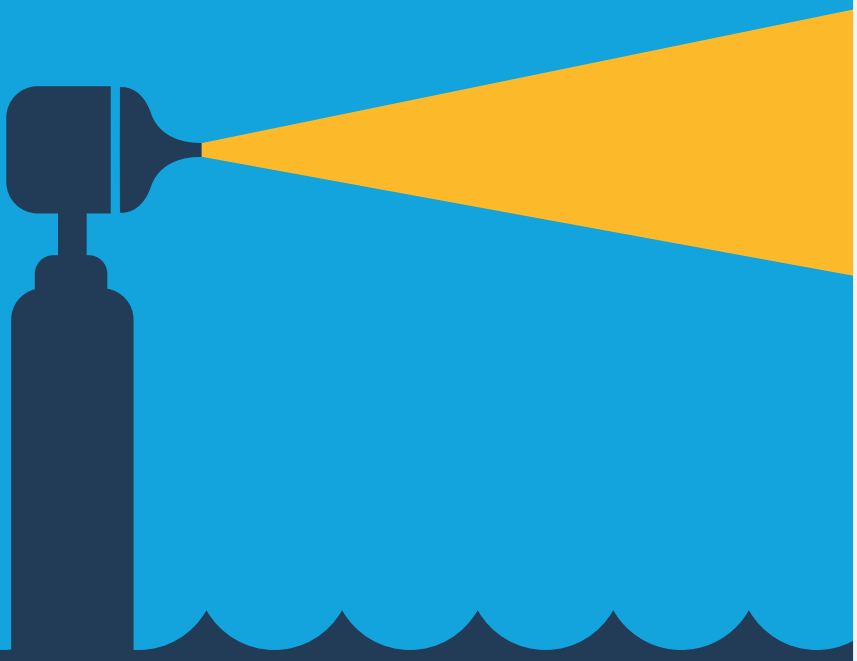

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Volume 68, Number 1 Winter 2017

Sonoma Medicine

The magazine of the Sonoma County Medical Association

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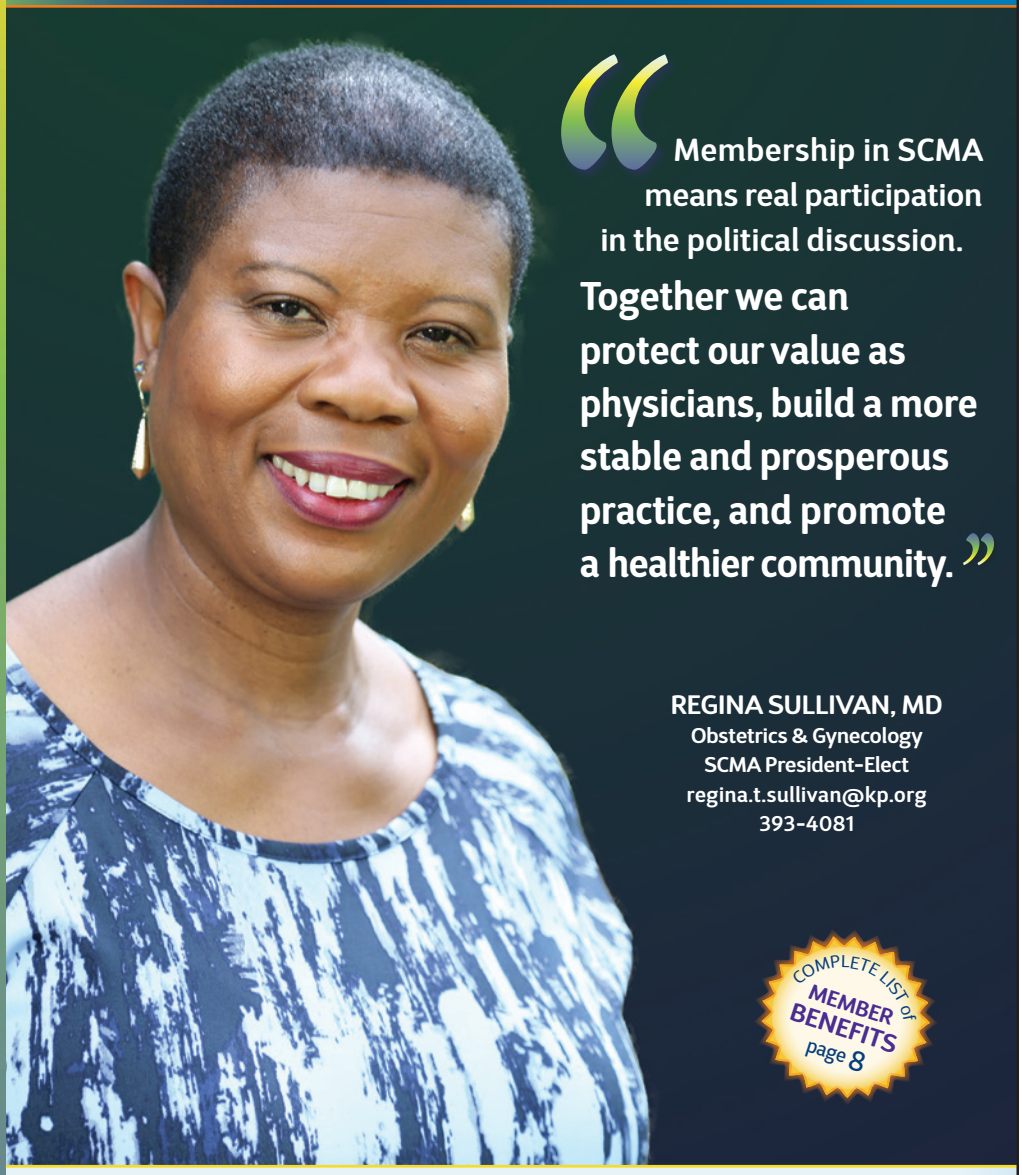

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COMPLETE LIST of MEMBER BENEFITS page 8

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The Second End of Prohibition

Jeff Sugarman, MD

My patients often ask me for marijuana prescriptions. One recent patient said she needed a prescription for her cancer and that cannabis was proven to help with that. How many ways can I unpack the ridiculousness of that request? First of all, she did not have cancer. Even if she did, I could not find any credible evidence that cannabis cures cancer. She was not undergoing chemotherapy and therefore could not claim she was seeking relief from the nausea that accompanies it, one symptom that cannabis *has* been shown to treat effectively. Furthermore, cancer is not one disease, but many. Any chance of successful treatment requires tailored therapy rigorously studied to show survival benefit. My conclusion was that the patient was just looking for access to cannabis by abusing the medical marijuana law. I was upset because she was asking for my complicity.

There is much anecdotal information purporting that cannabis cures everything from aches to xenophobia. Despite the widespread medical use of marijuana in California and 27 other states, well-executed scientific studies on its efficacy for many conditions for which it is prescribed are lacking or have produced mixed results. Although federal classification of cannabis as a Schedule I drug hampers research, evidence for the legitimate medical use of marijuana or cannabinoids is limited to a few indications, notably HIV/AIDS cachexia, nausea/vomiting related to chemotherapy, neuropathic pain, and spasticity in MS.[1] In contrast, there is significant literature on its potential adverse neurological effects, particularly for chronic and heavy users and in adolescents and young adults whose pre-frontal cortical regions are still developing.

Anti-epileptic effects of THC have been widely cited as proof of potential benefits of cannabis; but a Cochrane meta-analysis revealed that studies of those purported benefits were not adequately powered and were of low quality.[2] The meta-analysis not only found inconclusive evidence of efficacy, but also that THC may actually promote seizures in some patients. Heavy regular cannabis use, especially in adolescents, is associated with higher rates of persistent negative outcomes in adulthood, including increased rates of mental illness and cognitive impairment.[3]

I would caution against making conclusions about the beneficial effects of cannabis on potentially serious disorders based solely on firsthand experience. Anecdotal observations are insufficient to exonerate adverse events of any drug. While insights gained in the clinic are sometimes intriguing, they should be used as a launching pad for rigorous study and hypothesis testing before conclusions are drawn.

It seems likely that most patients who obtain marijuana for ostensibly medical purposes use it for recreational purposes. Population characteristics from a survey of nine California medical marijuana clinics revealed that the clients were overwhelmingly familiar with cannabis.[4] My point here is not that cannabis is "bad," but that in medicalizing its use for just about any ailment, the medical community is complicit in a widespread conflict of interest, fraud and hypocrisy.

During Prohibition, the U.S. Treasury Department authorized physicians to write prescriptions for medicinal alcohol. Every 10 days, patients willing to pay about $3 for a prescription and another $3 or $4 to have it filled could get a pint of booze. In *Last Call: The Rise and Fall of Prohibition,* author Daniel Okrent observes, "There may have been some people who were being prescribed because there was a perceived medical need, but it was really a way for some physicians and pharmacists to make a few extra bucks."[5]

Medical marijuana patients who are truly searching for relief from their ailments would be better served by recommendations from the medical community that are based on high-quality evidence. Many patients, however, are just seeking cannabis for pleasure, and doctors who prescribe the drug may find it easy to construct medicalized explanations for the benefits while getting paid to do so.

At the end of Prohibition, society decided that the risks of alcohol were outweighed by its benefits and the impracticality of criminalizing it. With the passage of Proposition 64, Californians have decided the same for recreational cannabis. State residents 21 and over can now grow up to six plants and possess one ounce of marijuana—but it is still illegal to sell cannabis without a state license, smoke in public or drive under the influence. Importantly, cannabis use is still illegal under federal law.

The passage of Prop 64 will likely decrease the use of illegitimate medical marijuana prescriptions. While there may be societal benefits for decriminalizing the recreational use of cannabis, we must be aware that there is potential harm in uncritically accepting cannabis use as benign. At least the medical community may no longer be passively sanctioning its use for spurious medical conditions. ◇

Dr. Sugarman, a Santa Rosa dermatologist, chairs the SCMA Editorial Board.

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January 2017

Winemaking with a Medical Bent

Rachel Friedman, MD

Dr. Friedman and her husband, Marc Kraft.

Oops, sorry!" I apologize as a few drops of wine splash outside the glass onto my guest's hand. "This isn't my day job." It's a Saturday afternoon, and after a busy week of seeing patients as a family physician, I am behind the bar at the winery my husband and I own, guiding guests in a wine tasting. When I explain that I not only own a winery but also spend my week as a physician, they seem impressed and say with a touch of envy, "Wow! You are really living the dream!"

Am I? I never really dreamed of owning a winery or getting involved in winemaking. In fact, the sum total of my wine knowledge when I moved to Sonoma County was on the order of: *Wine is made by fermenting grapes to produce alcohol. Some wine is red, some wine is white, and some wine is pink and called rosé.* When I interviewed at the Santa Rosa Family Medicine Residency in 2007, my future professor Dr. Dave Schneider, a self-identified wine buff, offered a handout with recommendations for wine tasting. Other applicants seemed excited about the idea of living in wine country, but I didn't take the handout and instead spent my post-interview afternoon finding a coffee shop and a running trail that would make me feel excited to call Sonoma County home.

So how did I get from there to here? After matching at the residency and moving to Santa Rosa, I did feign a bit of interest in wine, and by the end of my intern year I'd learned that I enjoyed a good Merlot and had added words and phrases like *Russian River Valley* and *Gewürztraminer* to my still limited wine vocabulary. At the same time, I had concerns about living in wine country, as I saw plenty of patients suffering the ravages of alcoholism and end-stage liver disease.

And then, as the story goes, I met someone. He was a former hospital lab technician who had experienced a eureka moment in 2001 when he found himself serendipitously sitting next to an apprentice winemaker. He realized that winemaking was a way to bring creativity and lifelong learning to the logic of science. He moved across the country to Napa shortly thereafter to start a new career as an aspiring winemaker.

On our first few dates, Marc wooed me with stories of running CBCs and erythrocyte sedimentation rates in hospital labs, along with promises of grape stomping, the obvious dream of anyone who grew up watching "I Love Lucy" reruns.

As our relationship and my second year of residency intensified, I was bored to tears by Marc's passionate monologues about rootstock and clonal selection during weekend drives along the vineyard-studded back roads of Sonoma County. Nonetheless, I was struck by his passion for his craft, and as a physician I could identify with his commitment to lifelong learning: the notion of diving

Dr. Friedman, a Santa Rosa family physician, is a co-owner of Orpheus Wines in Kenwood.

deep into specialized knowledge and skill while geeking out on science.

As we got engaged and started talking about starting a life together, a family, and at some point in 2011, a winery, I hesitated about the winery. I wasn't sure how I felt about condoning a career devoted to making alcohol, a substance that has the potential to wreak such havoc on people's bodies, relationships and lives. Yet, as I learned more about the winemaking process, I realized that Marc's love for winemaking had as little to do with wine as an alcoholic beverage as my love for medicine has to do with using pain medications as a narcotic. I began to realize that winemaking, and medicine, are very similar fields.

The thrill of medicine for me (and winemaking for Marc) is in acquiring a foundation of scientific knowledge and skill, paired with the overlay of experience, lifelong learning, creative problem solving, hands-on skills and artistry applied to complex situations and personalized practice style. My primary connection as a family physician is to people, understanding the processes that occur inside their bodies when they are healthy or get sick, and finding ways to control those processes to restore health. The winemaker's primary connection is to grapes and yeast, understanding the processes that occur when they are combined, and finding ways to control those processes to create wine that captures the best flavors for the people who drink it.

Delving into winemaking and starting a small business has taught me so many things, along with finally supplying a use for all that organic chemistry! When was the last time you calculated molarity or considered the structure of an aromatic polyphenol? If you're a physician in clinical practice, it was probably sometime in med school, years ago. If you're a winemaker, it might have been yesterday. One of my favorite parts about winemaking has been getting a refresher in all the basic sciences I learned during my pre-med and medical training in a way that is not only fun, but also amenable for teaching people when I talk about the science of wine.

My favorite aspect of wine science is understanding how the process of winemaking brings out the flavors in wine, and how those flavor molecules interact with our tongues, noses, brains and memories to produce the experience of wine tasting.

Old St. Peter's Grape *(George Brookshaw, 1812).*

Wine is made by crushing grapes and adding yeast to the grape juice in a fermentation process that produces alcohol and carbon dioxide. During fermentation, yeast uses the sugars in the grape juice as food, and as the yeast enzymes cut off sugar molecules attached to aromatic polyesters and other aroma precursor molecules, they liberate these molecules, producing the aromas that characterize a particular wine. Different grape varietals have different aroma precursors, and different yeast strains chop up the sugar side chains in different ways.

The aromas of wine refer to specific aromatic compounds that our brains associate with a specific scent: you can identify the aromas of coffee, peppermint or strawberry just by smell, with your eyes closed. Primary aromas in wine, such as fruit, flowers or herbs, derive from the grape varietal used. Pinot Noir, for instance, may contain aromas of cherry. The molecules that trigger our brains to associate with a certain familiar smell can lead to the subjective experience of wine tasting. One person's cherry association may be another's cranberry or strawberry, or even cherry cola.

Secondary and tertiary aromas—sometimes called the wine bouquet and consisting of earthier flavors, nut and spice—emerge from the winemaking and aging process—whether from the inclusion of seeds and stems during fermentation, the types of oak barrels used, or the yeast. Other factors that contribute to the sensory experience of winetasting include the acidity of the wine, the alcohol content and tannins. I could go on for days about the science of food and wine pairing, but it's time to move on to the aspect of wine science perhaps most relevant to physicians: the health benefits of wine.

The therapeutic range for wine is a narrow window: one 4- or 5-ounce glass a day on average for women, one or two glasses a day for men. Drink more and the risks escalate dramatically, in a classic J-shaped curve. Even drinking modestly over the recommended amount may increase risk of breast and colorectal cancers; and any binge drinking seems to increase breast cancer risk independent of total alcohol intake. A recent meta-analysis found a dose-dependent increase in breast cancer risk with increased intake of wine.[1] Interestingly, increasing folate levels may mitigate the increased risk of both breast and colorectal cancer in alcohol drinkers. The lowest non-zero intake level appears to be protective and to reduce risks, adding further evidence to the recommendation to limit alcohol or wine intake, but not necessarily to fully abstain.

Known risks aside, epidemiologic studies have consistently shown health benefits for alcohol intake, especially red wine, within the narrow therapeutic

window. Modest intake of alcohol produces consistently strong evidence for overall cardiovascular benefit, decreased cardiovascular morbidity and mortality, and decreased all-cause mortality.[2]

How does alcohol, and red wine in particular, confer these benefits? While excessive wine drinking likely increases the risk of type 2 diabetes, studies have actually found decreased metabolic risk with moderate drinking. The recent CASCADE trial randomized 224 adults with type 2 diabetes to drink mineral water, white wine or red wine with dinner for two years. Red wine was associated with significantly increased HDL levels, improved glycemic control and reduction of cardiometabolic risk.[3] Ethanol thus appears to play a role in glucose and fatty acid metabolism, though red wine seems to have benefit beyond that of just the alcohol it contains.

One source of health benefits in wine distinct from other alcoholic beverages may be resveratrol, a polyphenol found primarily in the skins of fruits such as grapes, blueberries and raspberries.[4] Making grapes into wine increases the resveratrol content, with red wine containing far more resveratrol than whites because red-wine grapes are fermented with their skins, thus increasing the duration of resveratrol extraction. Pinot Noir seems to have higher concentrations of resveratrol than other red wines.

Resveratrol's benefits may include decreasing inflammatory markers, increasing HDL, and downregulating pro-inflammatory genes, along with some anti-cancer effects.[5] Resveratrol may also play a role in reducing risk of neurodegenerative disorders and in modifying cardiac ion channel activity to regulate heart rhythm in atrial fibrillation. Although preliminary studies in animals and humans suggest benefits of increased resveratrol intake,[6] other studies of resveratrol supplementation have not yet yielded results sufficient to warrant encouraging patients to supplement with resveratrol alone. A glass of red wine a day is probably a better route.

Another contender in the quest for understanding the exact mechanisms for red wine's health benefits is quercetin, a flavonoid found in apples, berries and red wine. Studies of supplementation with quercetin have shown benefits in blood pressure reduction in hypertensive patients.[7] Another promising avenue of research is the role of quercetin and other red wine polyphenols in protecting against the oxidative stress and pathology implicated in Alzheimer's, Parkinson's and other increasingly common neurodegenerative diseases.[8] As with resveratrol, there isn't any clear proof that isolating quercetin into a supplement is beneficial; we may do best by continuing to promote a plant-based Mediterranean diet, with dark chocolate and red wine adding extra dosing of healthy polyphenols.[9]

Like medicine, winemaking is not a neat and tidy laboratory science devoid of any larger context. Making

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wine requires acknowledging issues that loom large: the rising threat of climate change; water shortages in Sonoma County and California; issues of social justice and health disparities for farmworkers and grape pickers; public health concerns about alcohol abuse and driving under the influence; corporate takeovers of family farms and wineries; and environmental concerns about the use of pesticides and herbicides. Perhaps "living the dream" of being a family physician in Sonoma County can, in fact, be compatible with owning a winery. Just as the basic sciences common to both medicine and winemaking were part of my initial dream to become a doctor, the big-picture issues of food as medicine, public health and social justice are the passions that drew me to family medicine, and to the Santa Rosa Family Medicine Residency in particular.

So what is my dream as a winemaking family physician? What if we could convince winemakers and winery owners to be stewards of public health and environmental advocates, and perhaps increase the pipeline by keeping future doctors excited about organic chemistry and microbiology through making their own wine? Perhaps Sonoma County could benefit from more collaboration between winemakers and physicians, each passionate about the balance of tradition and innovation; of scientific foundation and the art of practice; and of controlling molecular processes and accepting the subjective nature of people's experience.

Above all, physicians should be advocates for health and wellness. In the right setting and context, and paired with the right foods, wine can be a factor in promoting higher quality of life, health and wellness. Wine can bring people together to share the experience of eating meals, and it can act as a social lubricant to enable meaningful connections, thereby improving people's sense of community and enjoyment of life. Cheers! ◇

Send comments to osborn53@sonic.net.

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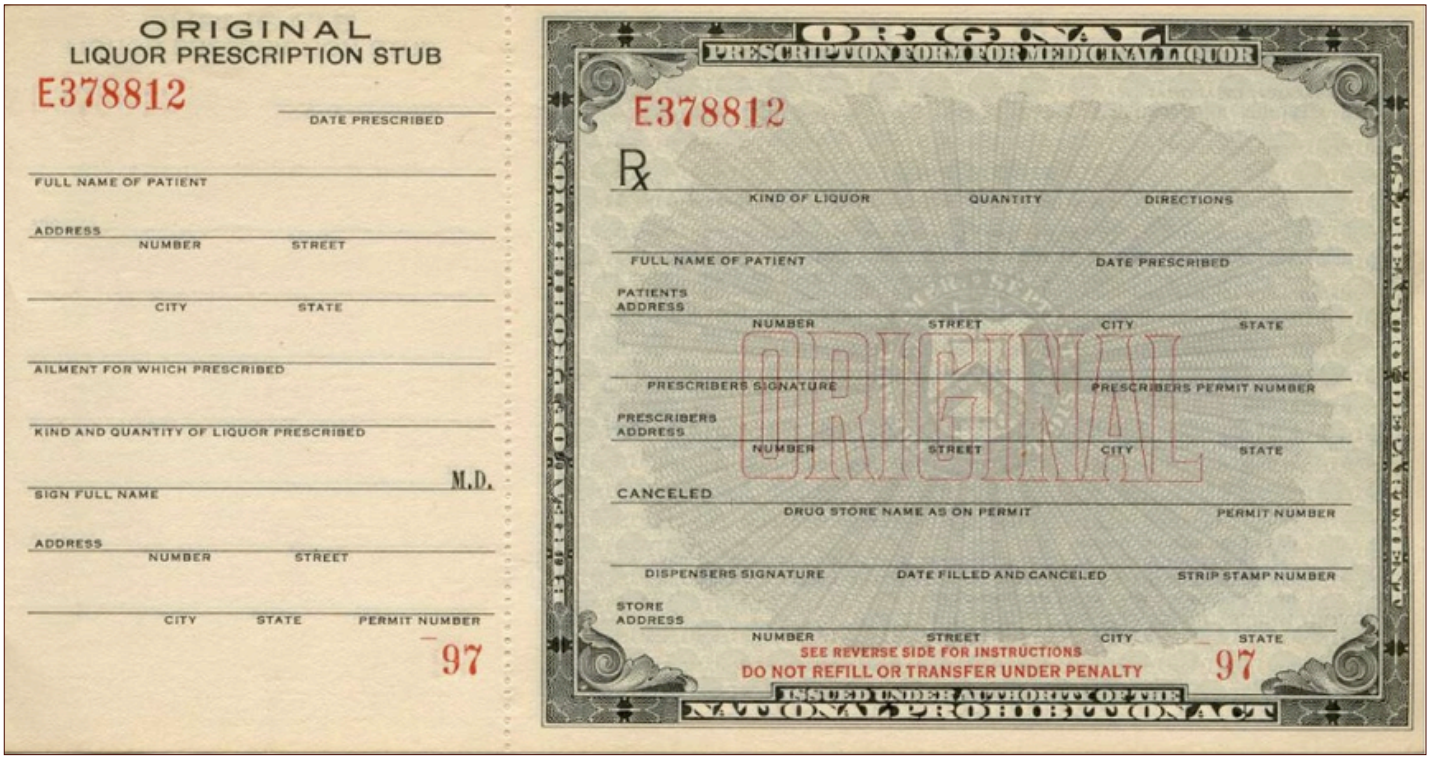

Medicinal liquor prescription form used during Prohibition *(see page 7).*

Treating Alcohol Use Disorders

Peter Madill, MD

Temperance Lecture *(Edward Edmondson Jr., 1861).*

During my nearly 30 years of treating addictions, one of my practice focuses has been on medically assisted treatment (MAT) agents for substance use disorders, including alcoholism. MATs improve relapse rates much more powerfully than behavioral interventions delivered alone.[1,2] Over and over again, I have been privileged to witness the rebuilding of lives enabled by MATs. While evidence-based behavioral interventions are important,[2,3] the tragedy is that MATs continue to be minimally used, especially for alcohol use disorders, even though the evidence consistently shows that outcomes when best practices are applied match those achieved with diabetes, hypertension and asthma.[4] Even President Obama issued a plea in his final State of the Union address for more doctors to learn how to use MATs.

Alcohol and drug use disorders create misery, suffering and pathology, thus extracting an enormous toll on individuals, families and communities, yet our response to them remains fitful, poorly coordinated and significantly underfunded. This is especially true when we factor in addiction to fructose, as in sugar and high fructose corn syrup, and refined carbohydrates, such as white flour, which lead to the epidemics of metabolic syndrome, central obesity and type 2 diabetes.[5,6] Nevertheless, our local medical community has picked up the baton in regards to the increase in opioid use disorders and opioid overdose deaths. The Summer 2016 issue of *Sonoma Medicine,* which focused on the opioid epidemic, included alarming statistics on the overly liberal prescribing of opioids, along with even more alarming data on deaths from opioid overdose. Not captured by these statistics is the profound influence of social and economic forces in many of these deaths, which involve a marked preponderance of white middle-aged females living in rural or semi-rural counties.[5] A high proportion of these overdose deaths may in fact be suicides,[7] and alcohol is a critical player in a significant number.[3,7]

As alarming as the opioid statistics are, they are overshadowed by the morbidity and mortality arising from alcohol use disorders (AUDs). Opioid overdose alone accounts for about 13,500 deaths per year in the United States, but deaths from AUDs average 85,000 per year, and those from nicotine addiction are still in the 400,000 range.[2,3,6] We need to pay much more attention to AUDs, let alone persist in our efforts to reduce cigarette smoking.

Why aren't AUDs given the attention they deserve? One factor is the persistence of the Alcoholics Anonymous philosophy of moral failure, abstinence and spiritual awakening. Thomas McClellan, one of the pioneers

Dr. Madill, a Sebastopol physician, specializes in treating addictions, pain and functional somatic illnesses.

of bringing science to the study of addiction, explains how the AA philosophy played a major role in keeping the diagnosis and treatment of substance use disorders (SUDs) outside the purview of mainstream medicine.[4,8,9] As a consequence, the AA philosophy was relatively free of the demand for evidence-based treatments. A second factor in the lack of attention for AUDs is that moderate use of alcohol may help prevent cardiovascular disease. A third factor is that many in our profession enjoy the moderate use of wine; in Sonoma County, some may even be involved in the wine industry. The fourth factor is the widely held attitude that addiction is a manifestation of weakness and failure. In this view, people who are vulnerable to addiction make poor choices and are therefore subject to moral disapproval.

This moral attitude toward addiction runs counter to the facts. Studies have shown that there is nothing uniquely human about vulnerability to addiction. Any creature that moves can be rendered vulnerable to addiction. Rats and other lab animals that are studied to elucidate the mechanisms of addiction are not capable of making conscious choices, yet they exhibit all the classic behaviors of being addicted.[9,10] Years of genetic studies have found that certain people are rendered more vulnerable to alcoholism by chance events in the chromosomal casino.[10,11] For alcohol, the vulnerability factor hovers just over 50%, meaning that some people are rendered more vulnerable to alcoholism through no fault of their own before they ever climb out of the cradle.[11]

Then there is the elephant in the waiting room. The CDC's figures on the incidence and lifetime impact of childhood maltreatment through neglect and/or abuse are staggering.[12] Childhood maltreatment makes patients significantly more vulnerable to both psychopathology and substance abuse.[13] About 80% of patients who present with substance abuse disorders have comorbid psychiatric disorders.[13–15] These patients are vulnerable to addiction not because they're seeking to get high, but because they're coping with the altered affect and frank dysphoria that are the long-term legacy of childhood maltreatment. I have yet to meet a patient who began using drugs or alcohol with the express intent of becoming an addict. Such patients almost invariably experience more prolonged and complicated courses in regards to their substance use disorders. Physicians need to ascertain whether there is a prior history of childhood maltreatment and expedite treatment for this category of vulnerability, which neither dissipates with time nor with MATs for substance use disorders.

Alcoholism is a disease, not a choice. Nobody in our profession would disavow that diabetes is a disease, but we still encourage diabetics to make better choices in diet and exercise. The only difference between alcoholism and diabetes is that the former begins in the brain, whereas the latter begins

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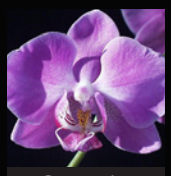
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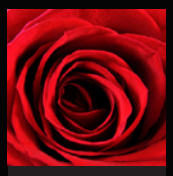
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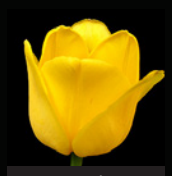
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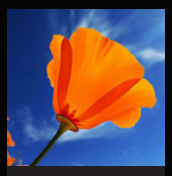
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in the pancreas. Does that make the pancreas more important and therefore more legitimate than the brain? An unfortunate part of alcoholism is that the neural machinery in the brain that enables choice-making is itself damaged by the disease.[9]

A number of factors should be weighed in determining the need for medication when treating a patient for an alcohol use disorder, such as the patient's motivation for treatment, the potential for relapse, and the severity of co-existing conditions. Three FDA-approved medications are currently available to treat AUDs: disulfiram, naltrexone and acamprosate. Because they don't carry a risk of misuse or addiction, they are not DEA-scheduled substances. Each has a distinct effectiveness and side effect profile. Medical providers should be familiar with these side effects and take them into consideration before prescribing.

Studies on the efficacy of medications for alcoholism have demonstrated that most patients show benefit, although individual response can be difficult to predict.[2,3] Medication interventions for AUDs can be provided in both specialty and primary care settings and are most beneficial when combined with behavioral interventions and brief support.[2,3]

Disulfiram (Antabuse) inhibits normal breakdown of the acetaldehyde produced by metabolism of alcohol, thus rapidly increasing acetaldehyde in the blood and producing an aversive response. The intensity of this response depends on the dose of disulfiram and the amount of alcohol consumed. Aversive responses include warmth and flushing of the skin; increased heart rate; palpitations; drop in blood pressure; nausea and/or vomiting; sweating; dizziness; and headache. Disulfiram essentially punishes alcohol consumption and indirectly rewards abstinence.

Disulfiram was the first medication approved by the FDA to treat AUDs, and its efficacy has been widely studied. Most studies have demonstrated that disulfiram, when given under supervision, is more effective than placebo.[16] A major limitation of disulfiram is adherence, which is typically poor, thereby reducing the medication's efficacy. Disulfiram is most effective when its use is supervised or observed, which has been found to increase compliance.[2,3] Negotiating with the patient to have a spouse or significant other provide supervision offers both the incentive to take the medication and the documentation that the medication is being taken. The best candidates for disulfiram are patients with motivation for treatment and a desire to be abstinent. A patient who wants to reduce but not stop drinking is not a candidate for disulfiram. Disulfiram should also be avoided in patients with advanced liver disease.

Naltrexone is an opioid antagonist that is used to treat opioid use disorder. Instead of combining with alcohol to produce an aversive reaction, naltrexone blocks opioid receptors, thereby counteracting some of the pleasurable

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aspects of drinking. It comes in two formulations: oral (Revia) and extended-release injectable (Vivitrol). Several studies have found that naltrexone reduces the risk of heavy drinking in patients who are abstinent for at least several days before treatment begins.[2] As with disulfiram, medication compliance can be a problem with the oral formulation. Compliance increases when dosing is observed by a trusted family member or when the extended-release injectable, which requires only a single monthly injection, is used.[17] Naltrexone should not be prescribed to patients with acute hepatitis, renal failure or liver failure.

Acamprosate (Campral) normalizes alcohol-related neurochemical changes in the brain glutamate systems to reduce the craving that can prompt a relapse to pathological drinking. Acamprosate has proven effective when used concurrently with behavioral interventions.[2,3] As with other medications for AUDs, it works best in motivated patients.[2] Acamprosate has also proved effective in reducing relapse and in maintaining abstinence.[2,3]

Topiramate (Topamax), an anticonvulsant, has not received FDA approval for treating AUDs, but it is widely used by addiction specialists for preventing relapse to heavy drinking. In some trials, topiramate has proven more effective than any of the three FDA-approved AUD medications, but it has a different side effect profile. Topiramate has different mechanisms of action, including dose-dependent inhibition of voltage-gated sodium and calcium channels; augmentation of GABA-A receptor induced chloride flux; and inhibition of glutamate-related excitatory neurotransmission. Prominent among its side effects are paresthesia, difficulty concentrating, psychomotor slowing, anorexia and dizziness. Other anticonvulsant medications, such as baclofen, gabapentin and pregabalin, have not proven their efficacy in reducing heavy drinking.

Varenicline (Chantix), a nicotinic receptor partial agonist, is the most recent entrant into the evolving field of AUD medications. It is proving useful not only in reducing addiction to nicotine, but also in reducing heavy drinking days in AUD patients.[18] This novel use is of great clinical relevance because so many patients with serious AUDs also smoke cigarettes. Health outcomes are dreadful when these two behaviors are combined. While there has been great fanfare about the supposed side effects of varenicline—such as marked increases in depression, suicides and even homicides—such concern has not been validated by repeating the original trials.[18] As a result, the FDA recently removed the black-box warning for varenicline, which should help clinicians feel more confident in prescribing this medication.

Unlike other AUD medications, varenicline may help reverse some of the cognitive and executive function deficits incurred by heavy alcohol consumption.[18] Combining naltrexone with varenicline may also confer additional benefits in reducing heavy drinking and cigarette smoking, not seen with either agent alone.[19]

Let me conclude with this thought. If you can help one individual or one family out of the nightmare of addiction via the prescription of MATs, your sacrifice in learning how to use MATs will be more than worth it. A repeated lesson for me during my years practicing addiction medicine has been the professional reward of witnessing the surprising rebirth of intention, motivation, executive function and responsibility that MAT prescriptions reliably enable. That witnessing is among the most rewarding professional experiences one can have, especially given that it comes from unsuspected quarters. The gratitude from patients and families alike for helping to enable this rebirth is a treasured memory. ◇

Send comments to osborn53@sonic.net.

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New Frontiers of Tobacco Danger

Brad Drexler, MD

Electronic cigarette *(Lindsay Fox, 2016).*

2016 has been a watershed year for landmark tobacco legislation in California. Governor Jerry Brown signed five important tobacco control laws, made possible because of the governor's special session on health legislation. Of these five, the one that will have the biggest public health impact is the historic law that will increase the legal age to buy tobacco to age 21. California will become only the second state in the country to enact this change, but it will inspire many to follow. The other really important law mandates that e-cigarettes should be controlled in the same way as other tobacco products.

In May, the FDA issued a final rule that extended its regulation of tobacco products to include e-cigarettes. As of August, no new products could be released without review. Existing products have two years to pass review or would have to phase out.

In November, the initiative to increase the tobacco tax by two dollars per pack was resoundingly passed by California voters, despite expensive and deceptive industry ads opposing it. California's tax rate of 87 cents per pack had been one of the lowest in the country, and hadn't been raised for 17 years.

Although most tobacco control legislation has been focused on protecting nonsmokers and youth, it has also had an equally important effect on decreasing the percentage of smokers—especially decreasing the percentage of youth starting smoking.

Sonoma County deserves kudos as the place where the Tobacco to 21 legislation was born. Fifteen years ago Dr. Len Klay and I and the Sonoma County Medical Association sponsored a California Medical Association measure to increase the smoking age in California to 21. For the next two years, aided by Dr. Rob Crane of the Tobacco to 21 Foundation, bills were introduced into the legislature—but they were soundly crushed by powerful lobbying forces.

Because of the efforts of local physicians, and despite the threat of lawsuits, the Healdsburg City Council courageously and overwhelmingly passed a local Tobacco to 21 law in October 2014—the first community in California to do so.

Three Sonoma County legislators—state assemblymen Jim Wood and Marc Levine and state senator Mike McGuire—co-sponsored the recent legislation. Assemblyman Wood helped lead an extended and down-to-the-last-minute fight to make sure that this bill passed the Special Session despite the industry forces against it.

What made this fight worthwhile is that the combination of education and tobacco controls have a huge public health impact and save lives. A recent Institute of Medicine analysis concluded that raising the minimum age for tobacco sales to 21 is one of the most powerful ways to prevent teens from ever starting smoking.[1]

Unfortunately, despite past successes, teen exposure to cigarettes (including e-cigarettes) has been increasing! The California Department of Public Health recently estimated that almost 300,000 California high school students are current smokers.[2]

The tobacco interests oppose increasing the tobacco age to 21 because they know that their future lies in continuing to addict teenagers for a lifelong nicotine habit. They oppose Tobacco to 21 because they know that most kids under 15 are getting their cigarettes from their 18-year-old acquaintances, and that studies show this access decreases precipi-

Dr. Drexler is an ob-gyn with offices in Healdsburg and Santa Rosa.

tously when the age is increased to 21.[1]

In 2005, the city of Needham, Massachusetts, became the first community in the U.S. to increase the age for tobacco sales to 21. The city has seen a drop of more than 55% in its youth smoking rate, and a 67% drop among teens aged 14–17.

According to the Surgeon General, 90% of smokers have already started smoking by age 18.[3] Of these young smokers, only one-third will ever quit, and one-third will die from tobacco-related causes. If you haven't smoked by 18, you are three times less likely to smoke, but if you haven't started by 21, you are 20 times less likely to ever smoke. According to The Campaign for Tobacco-Free Kids, the tobacco industry exploits these facts by spending an estimated $8.8 billion dollars a year targeting our young adults nationwide.[4]

The fact is that teen brains are not mature, and they are more prone to addiction. Teens need help to avoid picking up this lifelong habit.

Clearly tobacco increases the risk for many diseases we see frequently. As an ob-gyn, I still see the effects of smoking on reproductive risks: increased risk of infertility, sperm dysfunction, ectopic pregnancy, fetal growth retardation, and preterm delivery. We also see an increased risk of cervical, bladder, breast, and deadly ovarian cancer.

Because of social mores, smoking rates in women have been historically lower than in men, but along with the women's liberation movement, smoking rates in women have caught up. Sensing an opportunity, women were successfully targeted with marketing, including women's cigarettes and the catchy tagline: "You've come a long way baby." Other cigarette-associated diseases have caught up as well, including heart and lung disease. Lung cancer, unfortunately, has now eclipsed breast cancer as the most common cancer fatality in women.

Although more than 90% of pregnant moms quit smoking during pregnancy for nine months, two-thirds go back to smoking after their pregnancies. This is how addictive tobacco is! According to Dr. Michael Steinberg, director of the Tobacco Dependence Program at Rutgers University, "Cigarettes and tobacco contain some of the most addictive chemicals in our society. Smoking a cigarette delivers more nicotine more efficiently to your brain than if you were to inject nicotine intravenously."[5]

To understand the risk of new cigarette alternatives, it is important to understand the components of tobacco smoke that cause health risks. For years, the focus had been on "tar" and nicotine, but it appears that the situation is actually more complex.

Nicotine is certainly responsible for the addiction potential of cigarettes and tobacco products. It also can have an extremely intense vasospastic response: causing changes in blood vessels and platelet reactivity in less than 30 minutes after use—it has even been found that there are nicotine receptors on the vessel walls![6] Other negative effects on vessels include increase in atherosclerosis through vascular neogenesis, increase in arterial hardness, and other negative effects on heart, vessel or placental function.

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Over 70% of lung cancer (the leading cause of cancer death worldwide in both men and women) and 30% of all cancers are thought to be from tobacco exposure.

The carcinogenic potential of tobacco had been thought to be due to "tar," the resinous particulate matter in tobacco smoke. However, there is significantly more tar in marijuana smoke, but only a small increased risk of lung cancer seen in marijuana users.[7,8]

These particulates are certainly of concern. They can linger so long that there is evidence of negative effects even from third-hand exposure to particulates left by smokers or vapers on carpets or drapery (or remaining suspended in air) that are resuspended and affect subsequent inhabitants.

Only two components of the more than 4,000 chemicals found in tobacco smoke were initially felt to be carcinogenic: nitrosamines and benzopyrene. The paucity of carcinogenic components and the minimal risk of marijuana despite higher tar exposure has led to extensive efforts to find other reasons that tobacco would have such a great effect on cancer rates.

Other components felt to contribute include nicotine itself, but its carcinogenic potential appears to be low, and this effect is controversial. There is, however, some concern that "Nicotine-induced activation of vascular cells may contribute to pathological neovascularization in cancer."[8]

One interesting theory espouses that polonium and radon found in the soils and fertilizer where tobacco is grown in the U.S. and known to incorporate in the tobacco leaf might be a strong co-factor in the initiation of lung and other cancers; but the extent of this effect is still unclear. Radon is thought to be an etiologic agent in up to 20% of lung cancer, especially in those patients not exposed to tobacco smoke.[9,10]

More recently, more than 60 components of cigarette smoke have been identified as carcinogenic, and this combination of different noxious substances is more likely the etiology of carcinogenic effect, as co-carcinogens often have a synergistic effect.

Clearly, our understanding of the exact components of tobacco that cause cancer is still incomplete, and this increases the difficulty in assessing the safety of the latest fad in nicotine delivery: electronic cigarettes.

The e-cig delivery device consists of a battery, an atomizer, and either a refillable tank or disposable nicotine cartridge. Many are constructed to look very similar to cigarettes. The tanks or cartridge are filled with liquids usually containing tobacco, and up to 140 different components. The FDA has argued that it should regulate these devices, which are currently unregulated nicotine delivery devices. In fact, most manufacturers have refused to release the list of ingredients in their liquid mixes, arguing that these are "proprietary."

It has been reported that one of the most common ingredients is alcohol, and that Harvard researchers found the chemical diacetyl in more than 75%

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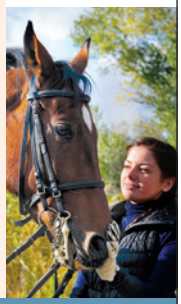

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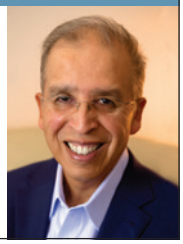

of mixes. Diacetyl provides a "buttery flavor," but it has been implicated in a severe lung disease known as "popcorn lung."

The initial response to e-cigs by the medical establishment was very mixed, some suggesting that they could be an effective way to quit smoking and, since the only tobacco component they contained was nicotine, they would certainly be safer than cigarettes.[11] The evidence suggests that, as with cigarettes, e-cigs have been marketed to teens as a way to cultivate new tobacco smokers, and that this strategy has been very effective. The devices do seem to promote nicotine dependence in non-smokers. Marketing to teens is obvious from the names and flavors common in vape mixtures, including skittles, cotton candy, watermelon, pina colada and juicy fruit. Cases of accidental nicotine poisoning in children have been reported; two involved ingesting grape and wintergreen flavored liquids.[12]

The only evidence of benefit so far seems to be efficacy for smokers who want to cut down, but do not intend to quit (a real but quite limited benefit). The risks appear to be multiple, and similar to those of smoking cigarettes.

There certainly does seem to be concern still about lung cancer: one study found that these devices commonly produce smoke that contains known carcinogens, including formaldehyde (a byproduct of the heating of plastic components).[13]

A novel risk of e-cigs is from explosion of the battery component. Most of the devices have lithium ion batteries and are made in China. The risk of explosion appears to be similar to the known battery issues in electric hoverboards. It appears that this risk increases when the devices have been "improved" by the user (it is apparently quite common and trendy to do so). Many of these reports contain graphic images of the significant injuries to the smoker, especially to the mouth and face areas, including significant dental injuries.[14] These concerns led the FDA, for the first time, to include the actual e-cigarette or vaping devices in its final rule—all devices will now have to be reviewed for safety.

Many "vapers" feel that their devices do not produce smoke, and therefore can be used indoors in public places with no concern for secondhand exposure of non-users; but this is not the case. Many studies now show carcinogenic and hazardous effect of the residue from vaping for non-smokers exposed to secondhand "vapor."[13]

What is the next frontier in preventing secondhand exposure of tobacco smoke? Indian casinos! It is unconscionable that employees and customers are still being exposed to high levels of indoor tobacco smoke at these venues, out of a wrong impression that they would lose customers if smoking were banned at these locations. Saloon owners had this same concern when smoking was banned at bars in California, but the studies showed that patronage increased as families and non-smokers now felt more comfortable in these smoke-free locations.[15]

Because the tribes are sovereign nations, and because their compacts have provided tax-poor government bodies with needed revenues, it will be very difficult to "unwind" all of these competing priorities—but this will be an important goal to achieve.

We've come a long way in California, and Sonoma County and its physicians have a lot to be proud of for our contribution, but there's still work to do! ◇

Send comments to osborn53@sonic.net.

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Quitting for Good

Jennifer McClendon, MPH

The hardest part of quitting smoking is changing your habits. "I had to trick my mind and make the change," recalls Eddie, a smoking-cessation class graduate at the Center for Well-Being in Santa Rosa. Prior to coming to the Center, Eddie wanted to quit for a long time, but habits were hard to break. Eddie began chewing tobacco at age 14 and switched to smoking cigarettes at age 30. He smoked every morning with his cup of coffee, when driving in his car, and on countless other occasions. He quit last year, at 48 years old, and has stayed tobacco-free for the last seven months.

Eddie credits several keys to his success in quitting smoking, including the support he received at home and from other class participants; the smoking cessation teacher's presentations; and a work environment where nobody else smoked. He can now walk up Taylor Mountain without stopping. His sense of smell and taste has increased, and his health is much better. He recently returned to the Center to share his story and inspire other participants in the smoking-cessation class.

With two out of every three smokers in California contemplating quitting within the next six months,[1] it's important to know which cessation resources are available to patients. Only 9% of smokers who attempt to quit are successful,[2] but studies have consistently shown that counseling, when combined with medication, doubles or triples the proportion of patients who stop smoking, with long-term success rates as high as 30% with each attempt.[3,4]

Smoking is a major cause of cardiovascular disease and is responsible nationally for one in every three deaths from CVD.[5] In Sonoma County, 570 county residents die each year from smoking-related diseases, representing 15% of total annual deaths. The estimated cost of smoking for Sonoma County was $278 million in 2009, summing both direct health care costs and indirect costs from lost productivity due to illness and premature deaths.[6]

While the percentage of smokers is on the decline, the number of youth who smoke e-cigarettes is on the rise. About 10% of adults in Sonoma County self-report that they smoke, but more than 14% of teens self-report smoking e-cigarettes.[1] On the bright side, 60% of smokers in the county are thinking about quitting in the next six months. The need for smoking prevention and cessation services remains a public health priority. By quitting smoking and staying smoke-free for 15 years, former smokers can lower their risk for heart disease to that of a non-smoker.[7]

The Center for Well-Being is a local nonprofit committed to curbing the effects of chronic disease in the North Bay. The Center offers smoking-cessation classes as well as the Smoke-Free Babies program, which provides individual smoking-cessation counseling to pregnant women and mothers with children under the age of five. The program not only helps these women, but also reduces their children's exposure to secondhand smoke.

The Center seeks to address the root causes of tobacco use by developing tobacco control policies that influence the availability and marketing of tobacco products. As a state tobacco-control grantee, the Center collaborates with the Sonoma County Department of Health Services to educate the community about city and county smoking policies. Recent successes include the City of Sonoma's ban on smoking outdoors and within multi-unit housing, and Sonoma County's enactment of strict licensing procedures for retailers who sell tobacco products. The Center also empowers youth leaders via Project TRUE (Teens R U educated?), so they can educate their peers and community on how to reduce tobacco, alcohol and drug use.

The smoking-cessation program at

Ms. McClendon is manager of business development and strategy at the Center for Well-Being.

Timeline of Smoking-Cessation Benefits[7]

- **In the first 20 minutes** after quitting, blood pressure and heart rate recover from the cigarette-induced spike.
- **After 12 hours,** carbon monoxide levels in the blood return to normal.
- **After two weeks to three months,** circulation and lung function begin to improve.
- **After one to nine months,** clear and deeper breathing gradually returns as hacking and shortness of breath diminish. The body regains the ability to cough productively, which cleans lungs and reduces risk of infection.
- **After one year,** the excess risk of coronary heart disease is reduced by 50%.
- **After five years,** the risk of mouth, throat, esophageal and bladder cancer is cut in half, and the risk of cervical cancer and stroke returns to normal.
- **After 10 years,** a former smoker is half as likely to die from lung cancer. The risk of larynx or pancreatic cancer decreases.
- **After 15 years,** the risk of coronary heart disease is the same as a non-smoker's.

the Center uses the American Lung Association's evidence-based Freedom from Smoking model.[8] Participants in the eight-class series work to quit smoking or chewing tobacco with guidance from smoking-cessation counselors certified by the Lung Association.

During the first class, the cessation counselor assesses each participant's readiness to quit—an important first step for tailoring classes to meet the needs of the group and engaging each person wherever they are in the quit process. Many participants are attending their first smoking-cessation class, and they may be attempting to quit for the first time after having smoked for 30 to 40 years.

Group support is what makes the smoking-cessation class successful. Everyone is there for the same reason: to gain tools and strategies so they can be successful in their quit attempt. The Center adheres to an individualized approach, with each person developing their own quit plan. The cessation counselor encourages participants to ask their medical providers about nicotine replacement therapies, such as varenicline (Chantix) or nicotine patches, as tools for increasing success with quitting.

When the program is used in combination with smoking-cessation medications, up to 60% of participants report having quit by the end of the eight-class series, and 25% report not smoking for one year after the program ends.[8] In comparison, only 5% of people who quit cold turkey remain non-smokers after one year.

All participants leave equipped with strategies to avoid relapse. Smokers on average have 10 quit attempts before they quit for good, so equipping participants with multiple behavioral change techniques increases the likelihood for long-term success. To help participants stay smoke-free after the class ends, the Center will soon be forming a smoking-cessation support group.

The Center measures program success through pre- and post-tests of smoking knowledge, determining smoking status at the end of the class, and 3–6 month follow-up to measure long-term quit success rates. Our local results mirror those of the national Freedom from Smoking program.

Candidates for the smoking-cessation class can be referred by their primary care providers on a rolling basis, using the same process employed by the Center's other disease management classes. The Center is included within many of Sonoma County's electronic medical records as a health education resource, allowing for a streamlined referral process. Alternately, medical providers can complete a paper referral form and fax it to the Center. Participants can also self-refer as they seek resources to support their attempt to stop smoking. ◇

Send comments to osborn53@sonic.net.

For more information on the Center for Well-Being's smoking-cessation classes, visit www.norcalwellbeing.org.

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Practicing Cannabinoid Medicine

Jeffrey Hergenrather, MD

Cannabis sativa *(Otto Thomé, 1885).*

My career in cannabis medicine began long before California legalized medical marijuana. In 1977, shortly after finishing my internship in general practice, I moved with my family to The Farm, a commune in rural Tennessee where cannabis was used for medical and spiritual benefits. For the first five years of my practice, I learned firsthand about the uses of cannabis for pain, mood disorders, autoimmune disorders, spastic disorders, PTSD, opioid withdrawal and many other conditions.

We subsequently moved to Sonoma County, where I practiced emergency medicine until 2001, when I began my transition into medical cannabis, well after it was legalized in 1996. I was quite comfortable with the idea of transitioning from emergency medicine to a cannabinoid medicine practice. During the first decade of practice, I approved medical cannabis use for various patients, almost all of whom were already using cannabis. The demographics of my practice have markedly changed since then, with the majority of my new patients having little or no experience with cannabis. They include elderly and demented patients, opioid-dependent chronic pain patients, and children with serious problems. I have found benefits in using cannabis as medicine for children facing autism, seizure disorders, various cancers and serious mood disorders. My elderly patients with chronic pain, insomnia, anxiety, depression and other conditions appear to benefit from cannabinoids as well, used with or without conventional medications.

Genetic variations in the human cannabinoid receptor genes (CB1 and others) may lead to new explanations for an array of idiopathic diseases, which are now proposed as "clinical endocannabinoid deficiency syndromes."[1,2] One summary of research concluded that, "Migraine, fibromyalgia, IBS and related conditions display common clinical, biochemical and pathophysiological patterns that suggest an underlying clinical endocannabinoid deficiency that may be suitably treated with cannabinoid medicines."[1]

Cannabis specialists use plant cannabinoids to augment the tone of the endogenous cannabinoid system (ECS) to mitigate the symptoms and progression of a wide range of diseases. A recent National Institutes of Health summary of cannabis research found that studies have implicated the ECS in a variety of physiopathological processes, both in the peripheral and central nervous systems and in various organs.[3] The summary concluded that, "Modulating ECS activity may have therapeutic potential in almost all diseases affecting humans, including obesity/metabolic syndrome, diabetes and diabetic complications, neurodegenerative, inflammatory, cardiovascular, liver, gastrointestinal, skin diseases, pain, psychiatric disorders, cachexia, cancer, chemotherapy-induced nausea and vomiting, among many others."

Dr. Hergenrather, a Sebastopol physician, is president of the Society of Cannabis Clinicians.

Cannabis has been repeatedly shown to have detrimental effects on cognitive functions, but there is active debate about how long these detriments persist.[4] A recent study observed that exposure to THC (the psychoactive constituent of cannabis) was associated with reduced hippocampal volume; but these effects were not found with exposure to CBD (the beneficial constituent of cannabis) or after extended abstinence.[5] Another recent study found that lower grade-point averages associated with persistent cannabis use in high school students lost statistical significance when controlling for concomitant alcohol and tobacco use.[6] Similarly, another study suggested that cannabis use was not associated with IQ or educational performance after adjustments were made for cigarette smoking and other confounds.[7] One prospective study did surmise a neurotoxic effect of cannabis on the developing brain that permanently lowers IQ,[8] but a review found the study's conclusions premature in light of likely confounding from socioeconomic status.[9]

For decades, the National Institute on Drug Abuse has looked for harm associated with the use of cannabis. Proposed research aimed at finding benefits of cannabis use is categorically rejected as being outside the mission of the NIDA. Without studies, there will be no federally legalized medical cannabis and no competition for the pharmaceutical industry.

Perhaps the greatest story never told is the minimal pulmonary harm in chronic heavy cannabis smokers. Dr. Donald Tashkin, professor emeritus of pulmonary medicine at UCLA, has been on the federal payroll for 45 years trying to find harm in smoked cannabis. He has reported no significant change in pulmonary function studies among cannabis smokers, and he hasn't established any clear link between cannabis and COPD or emphysema.[10] Along with other researchers, he found no increase in cancers in the larynx, pharynx, trachea, lungs, or esophagus in heavy cannabis smokers.[11] In fact, heavy cannabis smokers exhibited a 37% decrease in developing those cancers compared to controls. Cannabis smoking does lead to airway inflammation and mucus production and can lead to chronic bronchitis. Vaporizing cannabis or other methods of administration are logical choices when treating patients with underlying respiratory diseases.

The issues of cannabis abuse, dependency and addiction remain quite controversial. A frequent assertion from the NIDA is that 9% of cannabis users will become dependent on the drug,[12] and many cannabis users have been labeled with cannabis use disorder. In contrast, other studies have found that cannabis has a lower abuse potential than alcohol, tobacco and illegal drugs.[13]

Plants have been the historical source of medicine for most of human history, and they continue to account for the base material of an estimated 25% of modern pharmaceuticals.[14] In most countries, prescription drugs of botanical origin can be approved as medicines after standardization based on sound science.[15] Botanical medicines can even meet FDA requirements, as has already occurred for a topical agent (Veregen, an extract of green tea) and an antidiarrheal (Mytesi) made from a single-component botanical isolate (crofelemer).

The return of cannabis to mainstream medicine has already begun, using the same time-honored process that any pharmaceutical must attain to receive regulatory approval: proof of biochemical uniformity and stability along with safety and efficacy as proven by randomized clinical trials. Nabiximols, an equal blend of whole plant extracts from cannabidiol (CBD) and tetrahydrocannabinol (Δ9-THC) cultivars, is already in use in 26 countries for treating pain and spasticity in patients with multiple sclerosis, intractable cancer pain and other conditions.[16–18]

One older study of dementia found that, "Compared to currently approved drugs prescribed for the treatment of Alzheimer's disease, THC is a considerably superior inhibitor of amyloid beta aggregation."[19] Whether cannabis forestalls the progression of Alzheimer's disease has not been studied, but it may be beneficial for agitation and aggression in the latter stages of the disease.[19–21]

Most of my patients prefer inhaled cannabis for its ease of administration and titration and its low cost. Vaporizers are not benign, but they are portable and discreet, and many patients find the vape pens convenient. Bioequivalence of vaporization compared to smoking has not been thoroughly established, nor has the optimal administration of vaporized cannabis for therapeutic purposes. Vaporization is a safer alternative to smoking because toxic byproducts such as carbon monoxide and tar are reduced. The subjective effects and plasma concentrations of THC are comparable to those obtained by smoking cannabis, but one study found that absorption is somewhat faster with the vaporizer.[22]

Marijuana is much more potent today than in the past. Cannabis grown without allowing fertilization has much greater concentrations of cannabinoids in the flowering tops. Any new patient should be cautioned to titrate slowly because one "toke," as opposed to an entire joint, may be a therapeutic dose. When modern marijuana is inhaled, much less material is used to get the same effect as in the past, significantly reducing inhaled products of combustion.

Oral doses of cannabis products are confounded by the metabolism

Cannabis Education Resources

CME courses in cannabinoid medicine can be found at **themedicalcannabisinstitute.org**.

The Society of Cannabis Clinicians video library offers many presentations in cannabinoid science and medicine at **cannabisclinicians.org**.

of THC into 11-hydroxy-THC (11-OH-THC), a first-pass metabolite known to be at least as psychoactive as THC. In one recent review, 11-OH-THC was described as 9–10 times more psychoactive than THC.[23] The vast majority of the ingested THC is further metabolized into an inactive metabolite, THC-COOH, before it reaches the systemic circulation. The resulting bioavailability of THC may range from 4–20%.[24,25] Based upon variable absorption, degradation in the stomach and the significant rapid first-pass metabolism, the vast majority of an oral dose is lost by metabolism to the inactive metabolites.

Buccal absorption of cannabinoids is theoretically advantageous because they can enter the bloodstream without first-pass metabolism; but most of the dose seems to be absorbed from the duodenum when considering the onset of action being up to 40 minutes after dosing. The bioavailability of buccal absorption has not been adequately studied. Topical cannabinoids have potential for treating many skin conditions and neoplasms, but clinical studies are lacking. Intraocular and other routes of administration of THC and other natural cannabinoids may lower intraocular pressure in humans,[26] but research has been limited because of potential adverse effects.

Rectal administration of cannabinoids as a hemisuccinate compound has demonstrated twice the bioavailability of ingested cannabinoids.[27] This form of administration largely avoids first-pass metabolism by the liver, and psychoactivity is found to be markedly reduced. Rectal administration gives patients the opportunity to receive large doses of cannabinoids with reduced psychotropic effects, though more studies are needed.

Although nearly all conventional pharmaceuticals have no drug-drug interactions with plant cannabinoids, high-dose CBD can slow degradation of some anticonvulsants, namely clobazam. For those treating intractable seizures with high-dose cannabidiol, blood levels of clobazam must be followed carefully to avoid toxic effects.[28]

Physicians who recommend cannabis can now use CBD-rich, balanced THC:CBD, THC-rich, and other cultivars in selecting for the best cannabis medicine to meet a particular need. With over 400 active constituents in the plant, other cultivars rich in various terpenoid molecules and cannabinoids, such as THCA, THCV and CBDV, are being developed for therapeutic opportunities with reduced psychotropic effects. For now the emphasis is on narrowing the scope of measured cannabinoids to the THC and CBD ratios.

As long as cannabis remains on Schedule I of the Controlled Substances Act (CSA), there will be no Medicare or insurance coverage for cannabis or cannabinoids. Future options may include placing cannabis in an existing CSA schedule (such as II or III), placing it in a new scheduling category or unscheduling it altogether—but none of these options are currently acceptable to the federal government, the health care industry or the pharmaceutical industry. If cannabis was rescheduled from Schedule I to an existing or new CSA schedule, insurance coverage would logically pay for cannabis when prescribed by a physician. If cannabis was unscheduled, it would be no different from any other herbal product.

Many physicians are eager for well-designed clinical studies to better understand the risks and benefits of cannabis use. Removing cannabis and natural cannabinoids from Schedule I of the CSA would go far in allowing the development of plant-based cannabinoid medicines. In this way regulatory standards can be fulfilled, and patients can be treated in safety. Such an approach would remove the clandestine atmosphere surrounding cannabis and promote a therapeutic doctor-patient relationship. ◇

Send comments to osborn53@sonic.net.
(References appear on page 26.)

Disclosures: Dr. Hergenrather has no financial relationships to disclose.

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LETTERS

To the SCMA Board of Directors:

I have chosen not to renew my membership in the California Medical Association, and thereby surrender my eligibility to continue to serve on the SCMA Board.

CMA and others (e.g., our own *Santa Rosa Press Democrat*) swallowed the bait from Pharma, who paid $100 million to confuse Californians into believing that Prop 61 would raise drug prices. (Prop 61 called for CA to pay no more for drugs than the fair bargain price negotiated by the VA.) It's Pharma who threatened to raise prices if Prop 61 passed . . . like a neighborhood bully who threatens to bully us all the more if we call their bluff. Yes, it's bullying to force parents to pay $600 for a 37 cent drug to save their child from anaphylaxis. Or a dying patient to pay $4,000 for a $17 drug to aid them towards an imminent death free from incapacitating pain. In any other sector of our economy, the pricing of pharmaceuticals would be called extortion. That CMA would lend its influence and affix its brand at the very top of the campaign against Prop 61 should be cause for concern for us all. That my own dollars from SCMA dues, direct or indirect, abets such greed makes it personal.

SCMA has been an exemplary local organization. The Residency Program owes its survival to SCMA's leadership. I have urged the residency to replace me with a faculty representative who will honor SCMA's past support, as well as hold its future obligation to inform and guide its constituency (physicians) and their constituency (our patients) to wise choices in the ongoing reform of our health care system (sic).

I owe much to SCMA's support of my medical writing, and the editorial guidance of its outstanding editor. I hope the day will come when SCMA and its publication will take a stand, more enlightened and informed than the current status quo of our governing board of the California Medical Association. When that day comes, I will consider renewal of my SCMA membership and responsible participation as a fully engaged member.

Sincerely,
Rick Flinders, MD

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Eliminating Hepatitis C

Danny Toub, MD

John, a healthy 53-year-old man, is diagnosed with chronic active hepatitis C (HCV) on routine screening. A blood test reveals that he has a fibrosis score of F0-F1, indicating mild liver disease. (F2-F3 indicate moderate to severe fibrosis, and F4 indicates cirrhosis). After completing 12 weeks of HCV treatment with one pill once daily, he achieves a sustained virologic response, meaning that HCV is no longer detected in his blood.

Few areas of medicine have had as many transformative changes over the last few years as the treatment of hepatitis C. With FDA approval of safe, tolerable and effective direct-acting antiviral agents (DAAs), elimination of HCV-associated disease is now within reach.

HCV is the most common bloodborne infection in the United States, where it affects an estimated 2.7 to 5.2 million people, and it is the country's leading cause of liver transplants.[1] In 2010 alone, HCV-related hospitalization charges in California totaled more than $2.3 billion.[2] HCV superseded HIV/AIDS as a cause of death 10 years ago, and HCV mortality continues to increase.[3] As many as 150 million people globally—more than 2% of the world's population—live with chronic HCV infections, and approximately 700,000 of them die from HCV-related disease every year.[4] Fortunately, better HCV treatments have become available just as the patient population at highest risk of long-term complications is about to peak.

HCV is most commonly spread through the sharing of needles or syringes used for drug injection, but it can also be passed from an infected mother to her baby, through sexual contact, by sharing razors and other personal items, by blood transfusions, by snorting cocaine, or by unknown mechanisms. About 80% of people infected with HCV develop chronic infection, and about 20% of chronically infected patients will develop cirrhosis.[5]

Until recently, HCV treatment involved a lengthy, interferon-based injectable treatment with significant adverse effects and relatively low cure rates. Current HCV treatment with DAAs requires one pill once daily for 12 weeks, with higher cure rates than traditional treatment.

Three 12-week DAA regimens for curing HCV with one pill once daily have been approved by the FDA: ledipasvir/sofosbuvir (Harvoni; for HCV genotypes 1 and 4–6), grazoprevir/elbasvir (Zepatier; for genotypes 1 and 4) and velpatasvir/sofosbuvir (Epclusa; pan-genotypic).[6] All three of these DAAs are simple, safe, tolerable and effective: the chance of cure for patients who can take one pill once daily for 12 weeks is 90–99%.[7] In 2017, the FDA will likely approve pan-genotypic DAAs that cure HCV in eight weeks; promising new data for three new combinations was presented at the American Association for the Study of Liver Diseases this past November.[8] Subsequent generations of DAAs will further shorten treatment with greater potency, higher barriers to resistance, and further increases in cost-effectiveness.

Treating HCV does more than prevent liver-related morbidity and mortality for people living with HCV. Treatment may improve or prevent some extra-hepatic complications that are not connected to liver fibrosis, such as cryoglobulinemia. In addition, curing people with HCV helps prevent transmission and reinfection.[9]

Because DAA treatment is relatively easy to administer and monitor, it is reasonable for some primary care providers to prescribe these therapies. All patients with cirrhosis need specialty care for variceal surveillance with upper esophagogastroduodenoscopy (EGD).[10] Locally, HCV treatment regardless of ability to pay is available at Santa Rosa Community Health Centers, Petaluma Health Center and West County Health Center. At the Santa Rosa centers, we have treated more than 200 hepatitis C patients with DAAs, but we still have 400 patients to treat and likely several hundred more undiagnosed patients. We offer HCV group visits at four of our clinics and accept outside referrals.

Current HCV guidelines recommend treating all patients living with HCV (except those with short life expectancies), with the goal of reducing "all-cause mortality and liver-related

Dr. Toub is a family physician who provides HCV consultation at Santa Rosa Community Health Centers.

health adverse consequences, including end-stage liver disease and hepatocellular carcinoma, by the achievement of virologic cure as evidenced by a sustained virologic response."[7] Most Medicare Part D plans and the Veteran's Administration adhere to these guidelines of universal treatment. While most state Medicaid programs currently restrict access to HCV treatment because of the expense, some states have increased access to HCV treatment over the last three years by reducing fibrosis and sobriety criteria and by modifying requirements for medical providers. In 2015, Medi-Cal expanded treatment to patients with HCV regardless of substance use, and it reduced fibrosis requirements from a test score of F3-F4 to F2; but it still limits HCV treatment for many people with mild liver disease.[11] The HCV treatment authorization process for Partnership HealthPlan is detailed on its website.[12]

Much attention has been given to the wholesale acquisition cost (WAC) of DAA medications, but insurers negotiate pricing and few actually pay the WAC.[13] Even though the price of DAA medications is high, treatment is still cost-effective for all patients with HCV with estimated life spans of more than a year, even for patients with early fibrosis.[7,14] As costs continue to decline, access to treatment for all patients with HCV will become the norm: Medicaid programs in Washington, Florida and Massachusetts already have lifted restrictions on coverage of treatment for patients with chronic hepatitis C.[15] The federal government has directed health plans and state Medicaid systems to remove the current rationing techniques and labyrinthine prior authorization processes that limit the number of patients taking costly DAAs, stating: "Coverage policies cannot block hepatitis C patients' access to effective, clinically appropriate and medically necessary treatments."[16]

Despite the possibility of using DAAs to cure more than 90% of people living with chronic HCV, an estimated 45% to 85% of those people are unaware of their infection.[17] Infection rates are particularly high among baby boomers born between 1945 and 1965; an estimated three-fourths of Americans living with chronic HCV were born during those years. Because of these estimates, the CDC in 2012 recommended one-time HCV screening of baby boomers to identify most of the Americans living with chronic HCV who remain unaware of their infection.[1] In 2014, Medicare and Medicaid began to reimburse HCV screening when ordered within a primary care setting. Nonetheless, a recent California Academy of Family Physicians membership survey found that 60% of respondents did not routinely screen baby boomers for HCV.[2] At Santa Rosa Community Health Centers, only 21% of our 10,000 baby-boomer patients have been tested for HCV antibodies. Opportunities remain to improve rates of screening for HCV.

Once patients are diagnosed with HCV, linking them to recommended care and treatment services is essential. Without substantial improvements in testing and linkage to care across a wide range of health facilities, many thousands of baby boomers with HCV will continue to develop serious liver damage before being diagnosed. Dr. Jonathan Mermin, director of the CDC's hepatitis center, recently asked, "Why are so many Americans dying of this preventable, curable disease? Once hepatitis C testing and treatment are as routine as they are for high cholesterol and colon cancer, we will see people living the long, healthy lives they deserve."[18]

Screening only baby boomers will miss significant populations who may have undiagnosed HCV. For example, rates of HCV in younger people ages 18–24 are rising in Sonoma County.[19] The availability of cheap heroin, along with the recent shift away from prescribing opioids for pain, is likely to put many people at risk for acquiring HCV over the next several years. HCV treatment with DAAs is essential for preventing HCV infection and reinfection; this "treatment as prevention" for people who use drugs is the cornerstone of current HCV management. Other harm reduction strategies include safer injection methods, syringe access, opioid replacement therapy and counseling for reinfection prevention. Many people who receive effective HCV treatments subsequently take other steps to protect their health.

Because of the unprecedented advances in treating hepatitis C and other types of hepatitis, more than 190 countries have committed to eliminating viral hepatitis by 2030.[20] In the United States, the Health & Human Services Department updated its action plan for viral hepatitis in 2014,[21] and the National Academies have developed a national strategy for eliminating hepatitis B and C.[22] California also has a strategic plan for preventing and treating viral hepatitis.[23]

Locally, an ad hoc workgroup at the Redwood Community Health Coalition is trying to improve specialty care access for hepatitis, cirrhosis and colon cancer screening. The workgroup is also

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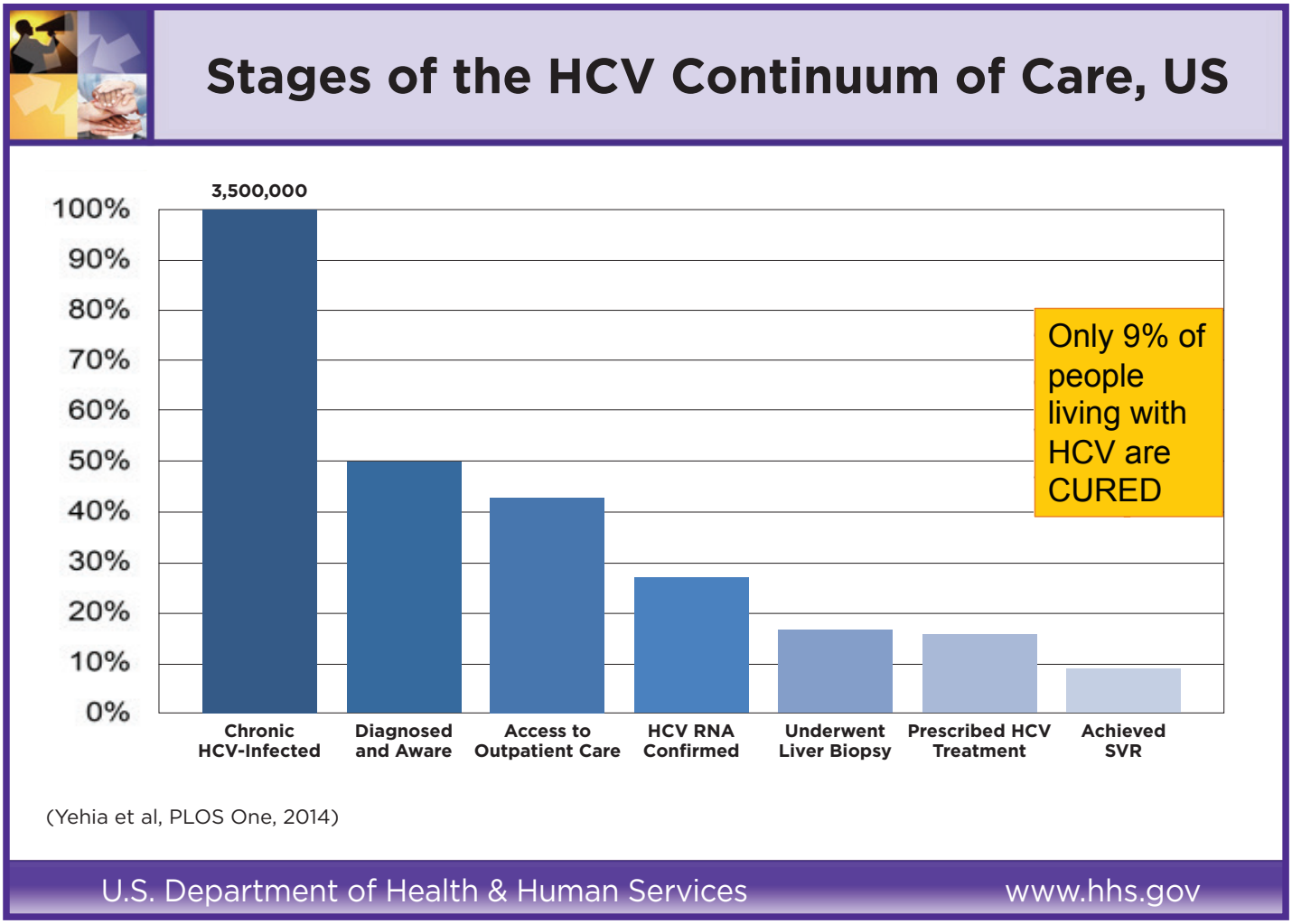

identifying best practices for HCV and cirrhosis management. Early diagnosis, linkage to care, and early treatment with ongoing education and advocacy are essential to ending the preventable and highly curable HCV epidemic in Sonoma County. ◇

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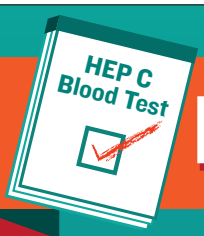
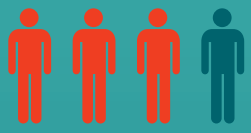


BORN FROM 1945-1965?

GET TESTED FOR HEPATITIS C



3 IN 4

people with Hepatitis C were born during these years

People born from **1945-1965 are 5X MORE LIKELY** to have Hepatitis C

Left untreated, Hepatitis C can cause:

LIVER DAMAGE FAILURE CANCER

MORE THAN

One Million

people living with Hepatitis C **DO NOT KNOW THEY ARE INFECTED**

Many people can live with **HEPATITIS C FOR DECADES WITH NO SYMPTOMS**

- Talk to your doctor.
- A blood test is the only way to know if you have Hepatitis C.
- Treatments are available that can cure this disease.

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KNOW MORE HEPATITIS

Untangling Genetically Engineered Food

Tara Scott, MD

California counties that have banned cultivation of genetically engineered foods.

This past November, voters in Sonoma County adopted the Transgenic Prevention Ordinance, also known as Measure M. The measure calls for a countywide ban on cultivating "transgenic agricultural products," commonly known as genetically modified organisms (GMOs) or, more accurately, genetically engineered (GE) foods. With the approval of Measure M, Sonoma County joined Humboldt, Marin, Mendocino, Santa Cruz and Trinity counties, along with 44 countries around the globe, in banning cultivation of GE crops in their fields. Fifty-six percent of Sonoma County voters cast their ballot in favor of Measure M, mirroring the results of a 2015 Pew Research Center study in which 57% of American adults polled expressed the belief that GE foods are unsafe to eat.[1]

The Pew study also indicated that 67% of adults polled believed that "Scientists do not have a clear understanding of the health effects of genetically modified crops." Reviewing the evidence used by the government and the biotechnology industry to support safety claims may help elucidate why the majority of voters in the U.S. still have concerns about the safety of these foods whether on our plates or in our fields.

All crops in the United States, whether genetically engineered or not, must first be determined by the Department of Agriculture (USDA) to pose no threat to existing crops. Next, the Food & Drug Administration (FDA) is responsible for determining the safety of the GE plant for human consumption based on data voluntarily supplied by the manufacturers. In special circumstances, as when the new GE crop contains a gene that makes a pesticide within the plant cells, the plant must also be evaluated by the Environmental Protection Agency (EPA). According to the FDA, genetically engineered crops are safe for humans to eat, based on studies that have shown them to be nutritionally equivalent to their non-GE counterparts and to be safe when eaten by laboratory animals for short periods.[2]

In 1994, the Flavr Savr tomato, engineered to stay firmer during shipping, was the first GE crop to gain approval for human consumption in the United States. The tomato's manufacturer, Calgene, presented basic toxicology data and 28-day rat feeding studies comparing rats fed the Flavr Savr to those fed non-GE tomatoes. The studies showed no significant changes in body weight,

Dr. Scott, a family physician, practices at Vista Family Health Center and is associate program director for the Santa Rosa Family Medicine Residency.

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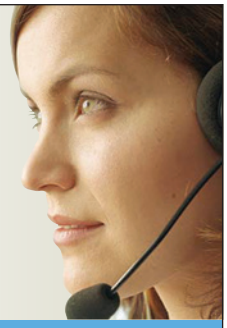

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organ weight, food consumption or hematologic parameters between the two groups.[3] In reviewing Calgene's application for approval to market the tomato, the FDA declared that plants derived from biotechnology were essentially equivalent to their non-GE cousins and required no specific testing to enter the market for human consumption unless there was an indication that the plant contained a potentially harmful substance. In this pivotal decision, the FDA established that GE foods would be granted "generally recognized as safe" status, unless the manufacturer's data suggested potential for harm. The FDA's decision paved the way for most subsequent GE crops to enter the market without requiring animal or human testing.[4]

More than two decades after the Flavr Savr tomato was approved, GE crops and food derivatives are ubiquitous. USDA estimates from 2015 show that approximately 89% of all corn and 94% of all soy grown in the U.S. is genetically modified.[5] According to one estimate, most food products on American supermarket shelves contain at least one ingredient made from the "big five" GE crops: corn, soybeans, cotton, canola and sugar beets.[6] In light of this saturation of GE foods into our diets, and given the difficulty of tracking consumption of GE foods and studying their long-term effects in humans, it seems reasonable to question whether the low bar set by the "generally recognized as safe" status of GE foods provided sufficient evidence to detect potential contributions to chronic disease that one might expect from such chronic daily exposure.

Internal FDA documents from 1992 about the Flavr Savr review, now available in the public domain, suggest that FDA scientists believed that GE foods had fundamentally different risks from non-GE foods and, as such, should undergo much more rigorous testing.[7] Some FDA scientists also expressed concerns about the safety of the Flavr Savr based on the short-term animal feeding studies submitted by Calgene.[7] These concerns were not acted upon, nor were they made known to the public.

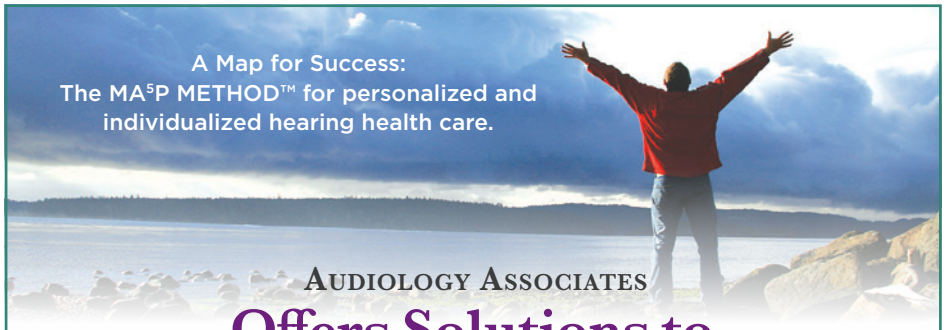
Echoing the safety concerns raised by FDA scientists in 1992, a recent review in *Environmental Sciences Europe* came to the conclusion that safety data in animals, commonly referred to as "evidence for safety," is heterogeneous, sometimes irrelevant to questions of safety, or even suggestive of harm.[8] The review's conclusions, endorsed by 300 scientists and scholars from around the world, criticize the current evidence on GE foods as being hampered by lack of independent funding sources and constrained by property rights issues or contractual agreements with biotechnology companies that give the manufacturer unacceptable control over publication.

The quality of research on GE foods should concern all health care providers and scientists, given that there is evidence in the medical literature demonstrating that industry sponsorship of studies by drug and device manufacturers leads to more favorable results and conclusions than sponsorship by other sources.[9]

Independent researchers outside of biotechnology firms have faced significant restrictions on their ability to conduct research on GE seeds. Under U.S. patent law, GE manufacturers such as Monsanto can restrict research on their products to agronomic comparisons and yield testing.[10] Prior to 2009, scientists who attempted to conduct research under special case-by-case approvals from GE manufacturers were dismayed by the companies' level of control over the research.[11] Following complaints to the EPA by a group of concerned researchers, some manufacturers began to allow scientists in designated universities to conduct research under what is called the Academic Research License. Critics say that these licenses still give the manufacturers significant power over the nature of the studies that can be done, even by researchers at approved universities.

Because of the enormous wealth of the biotechnology industry, with 2015 global biotech crop values estimated at $15 billion,[12] the industry's control extends beyond what research is done and who gets to do it. Biotechnology industry contributions to Congress are estimated at $25 million yearly.[13] Outside of Congress, the industry is known to use its economic power to influence state legislation unfavorable to GE foods, as it did by funding opposition to California's failed 2012 attempt to require GE food labels.

The biotechnology industry also has a seat at the table with lawmakers through public-private membership organizations such as the American Legislative Exchange Council, where it co-authors industry-friendly "model" legislation with elected officials in an attempt to block local measures that restrict GE crops. Biotechnology industry critics also point to the "revolving door" phenomenon, wherein industry employees move into regulatory positions in the government and then back to positions in the industry. This bidirectional employment exchange



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has raised questions about conflicts of interest within government regulatory agencies.

Taken together, these tools at the disposal of the biotechnology industry may provide some explanation for the FDA's approach to regulating GE foods and the challenges faced by those with opposing views who are often less financially and politically powerful.

In 2016, *JAMA Internal Medicine* published a revealing investigation into the sugar industry's role in the science, regulation and perception of dietary causes of coronary heart disease beginning in the 1950s.[14] Based on an extensive review of industry documents now in the public domain, the investigators reconstructed how the sugar industry, through its trade association, the Sugar Research Foundation, entered into financial relationships with diet researchers who had positions in key scientific advisory panels; selectively funded studies on dietary fats and cholesterols; and eliminated data from reviews that were unfavorable to sugar in order to shape beliefs, change dietary guidelines, and influence federal regulation of sugar. In doing so, the sugar industry intentionally and successfully obscured the real impact of sugar on health that we are only now beginning to understand. The investigators concluded their study by recommending that policymaking committees give less weight to studies funded by the food industry.

Health care providers who read the sugar study may feel reluctant to acknowledge that much of what we thought we knew about dietary causes of coronary disease is the result of an intentional effort by the food industry to shape the evidence. Nonetheless, the sugar investigation serves as a powerful example of how an industry can steer research, federal regulation and public perceptions about a food or ingredient. If we are to heed the lessons highlighted by the investigation of the sugar industry, health care providers should approach the biotechnology industry's claims for the safety of GE foods with a critical eye.

In spite of consistent claims about the safety of GE foods from the biotechnology industry and other organizations, an increasing number of dissenting opinions are being published. The FDA's own scientists, as well as current independent researchers, have expressed concerns about potential risks of GE foods that have not been addressed.[7,8] If we fail to see how the story of the sugar industry might apply to what we think we know about GE foods, we may find ourselves looking back and wondering how we could have been led astray again.

As researchers strive to uncover the true risks and benefits of GE foods, physicians and patients can make some simple changes in their personal habits if they are concerned about exposure. Consumption of GE crops can be reduced by growing your own food in a home or community garden; purchasing food directly from small farmers; or buying foods labeled "USDA Organic." When buying packaged foods, look for the "Non-GMO Project Verified" symbol or avoid non-organic foods with ingredients derived from corn, soy or canola, which are almost all from GE sources. As new federal labeling laws begin to roll out, health care providers should pay close attention to labels and consider talking to patients with chronic health problems about trying an elimination diet. We may be able to trace adverse reactions or disease contributions as the presence of GE foods and ingredients becomes more transparent.

Lastly, as health care providers who recognize the influence of financial bias, we should hold our government as well as our professional organizations accountable for transparency about their corporate ties, especially when they are making public statements about the safety of GE foods. In this way, we are better able to weigh, for ourselves, any potential industry bias when evaluating the quality of their statements. ◇

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Five Tenets for Medical Volunteering

Gary Barth, MD

Dr. Barth (left), Dr. Bob Anderson and colleagues in India.

Sonoma Medicine is inaugurating a new series on medical volunteering, and I am honored to contribute the opening article. As a complement to the articles, SCMA will be sponsoring meetings where physicians who are interested or experienced in volunteering can leverage their knowledge base. Given that our members are in separate medical groups, these forums will bring together doctors who otherwise have scant chance of discussing their rewarding and/or frustrating medical volunteering experiences with their colleagues.

My intent in this article is to set forth five tenets that have helped guide my medical volunteering over the years. These efforts stretch from working in a Tibetan refugee camp in India in 1977 to the recent "surgical eye camps" in Santa Rosa that earned the National Make a Difference Day All-Star Award. Some of these tenets ask for more than just our time and donated skills. I hope they will prompt you to consider making a new or different effort to help those in desperate need of medical assistance.

Dr. Barth, a Santa Rosa ophthalmologist, has been involved with international medical volunteering throughout his career.

Many of us come home disappointed with our first international effort, so plan at the outset for a second, more successful trip.

In 1977 I joined an established major player, Direct Relief International, and agreed to go to a clinic that they suggested, the Dharamsala Tibetan Refugee Delek Hospital in India. When I got there, I was unprepared for the absence of medications and diagnostic equipment.

Many of the Tibetan refugees had tuberculosis, and others had chronic respiratory symptoms. I was stymied as a general medical volunteer by the Indian government's decrees that limited access to alcohol in all forms, including the acid alcohol fixative for sputum diagnosis. Another handicap was that the available X-rays were postage-stamp sized and unreadable. In short, I was frustrated with my on-the-ground capacity to make diagnostic judgments.

My access to useful medications was limited as well. The donated medications available at the refugee hospital were often outdated intravenous drugs that were unsuitable for the refugees' medical conditions. I came home quite disappointed with my medical impact but still thrilled to have been able to live and eat around the noble Tibetan monks and to have had the enviable privilege of meeting one-on-one with the Dalai Lama in his own living room.

Sometimes volunteering just isn't enough. Adding some money can yield enormous benefits.

In the Tibetan refugee camp, it never occurred to me to hire a transport and personally procure medications and fixatives in another city. I could have taken a day off from the clinic and sought out medications. I know that I would have received full cooperation from the monks who ran the hospital. I also know that they would have been reticent about asking me to purchase the medications.

On a subsequent trip to India, Dr. Bob Anderson and I brought over necessary surgical supplies and a teaching microscope attachment. I also ended up buying a patient transport jeep to enhance the ability of our outreach staff

Nepal eye camp patients one day after cataract surgery.

to travel to remote villages to diagnose and transport blind cataract patients back to the hospital. With a manageable cash infusion, we were able to transform a volunteer effort into a sustainable operation that lasted long after we left.

International medical relief sites are often congested with inoperable equipment that local staff don't how to repair. Dr. Doug Grey, the founder of Operation Access, says that when he goes to Africa, he often finds broken donated equipment that the sites are reluctant to discard and yet can't refurbish or repair.

One solution to the problem of useless, donated equipment is to buy country-specific sustainable equipment.

I once volunteered to do eye surgery in western Cambodia, but the hospital needed a new ocular microscope. Before leaving for Cambodia, I used my own money, my physician dad's enthusiastic donation and a Rotary grant to buy a Chinese operating microscope. The key strategy here was that in Cambodia with its weak currency, the repair technician could only get parts from Chinese vendors. American or German repair parts needed hard currency that was not available in Cambodia.

The trip would have been very frustrating had I not collected the money ahead of time and made sure that the microscope was available and working when I arrived. When I left Cambodia, the in-country team had a functioning and repairable Chinese microscope. It was technically inferior, but it worked, a stark contrast to the donated, non-functional Olympus microscope staff had parked in a corner of the operating room.

Don't be reluctant to ask your family for financial support; they are often eager to contribute to a volunteer effort. While it is satisfying to bring over donated American equipment, a greater impact occurs when country-specific serviceable equipment is left on site.

Investing in key people maximizes impact.

Two examples come to mind. One of the frustrations of cataract surgeons in the developing world is the failure of blind rural patients to agree to leave their villages and come to surgery. In an Indian town that I visited eight times, we achieved much greater penetration in the countryside when we paid for formal outreach training. One of the staff, Gurunath, spoke the local tribal dialect. With our charity's backing, he agreed to go to a charity outreach eye hospital for six weeks. He returned with vastly better skills for listening to villagers and discussing their fears about the value of cataract surgery.

Another example of investing in key people comes from a joint effort between the Himalayan Cataract Foundation, the Moran Eye Center in Salt Lake City, and myself. With purchased and donated equipment, we were able to establish the only sustainable corneal transplant center in the western half of Nepal. I made three trips there with tools and corneal transplants, some donated and some purchased with my own money.

It was one of the proudest moments of my medical career to watch my splendid Nepali colleague, Dr. Bidya Pant, thrive with the new skills and equipment, and to see the patients' clear eyes on my return visits. I still get correspondence from a then 14-year-old blind girl who was one of the recipients of a top-quality purchased corneal donation.

Charities welcome bold suggestions that enhance capacity.

One such suggestion resulted in two $10,000 award checks from Newman's Own and the USA Today Foundation for our Operation Access charity care in the North Bay. Rather than continuing to volunteer for Operation Access patients during regularly scheduled surgical days, I proposed to Daniel Rabkin, program manager at Operation Access, that we create a first-rate, high-quality "surgical eye camp" for pterygium (surfer's eye) here in Santa Rosa. Since so many of the pterygium patients were agricultural workers, we coordinated with the leadership of Sonoma Wine Country Weekend. They provided funding for the supplies and the cost of Operation Access administration.

We were enormously successful, performing 24 corneal pterygium surgeries during the first camp in 2013. At last year's camp, we performed 31 surgeries in a single day. In addition to winning the two national award checks, we found that dedicated charity events yield other benefits. When charity cases are inserted into a traditional work day, the staff are required to be paid. When we declare a volunteer day, they get the added pleasure of truly donating their time. As a result, local volunteers keep signing up for the next eye camp. Such a team-building session has enormous value for all involved.

Nepalese eye chart.

My volunteering has matured over the years and has become increasingly effective and rewarding; but re-volunteering after my first unsatisfactory effort took a long time. I hope my observations will shorten your learning curve, and I encourage you to take the plunge and offer your considerable talents to those in need. ◇

Send comments to osborn53@sonic.net.

MYSTERY CASE

A Patient with Subacute Progressive Ataxia

Serena Edwards, MD

"Doctor, that new medicine you gave me made my legs weak." My patient was presenting for a follow-up visit after starting low-dose metformin six weeks ago.

"Oh?" I replied, "Tell me more."

I had known Victor for about two years. The day we met for the first time, I was running late, and I recall entering the exam room with an apology on my lips, only to encounter a middle-aged Latino man serenely reading a book on meditation and prayer. He told me during that visit that he'd had a stroke eight years before, which he attributed to stress, and that he was using prayer to forgive the people in his life who had wronged him. Over the next two years, Victor frequently shared how grateful he was to be healthy in body and mind. He walked a mile every day with his wife and indeed seemed well, apart from the elevated blood sugars that had since progressed to diabetes.

Victor explained that he had taken the metformin for about a week when he started feeling weak in the knees. "I stopped taking it," he confessed, "and I felt a little better for about a week. But now I feel the same as before." He described ongoing difficulty moving his toes, along with decreased sensation over both thighs. He was having trouble walking straight and reported a loss of equilibrium whenever he closed his eyes. "I nearly fell in the shower," he said. His wife had urged him to seek help, but "I knew that I had this appointment with you," he explained, "so I waited."

Alarmed, I performed a neurologic exam. He was alert and oriented, and his cranial nerves were intact. I could not appreciate any dysarthria or aphasia. His reflexes were 1+ in his upper extremities and 2+ in his lower extremities, and he had upgoing toes (Babinski sign) bilaterally. He had decreased strength of dorsiflexion and plantarflexion that was markedly worse on the left, and decreased sensation to light touch in his bilateral lower extremities. His finger-to-nose test was normal, but he had a staggering gait—a dramatic change from our previous visit—and a positive Romberg's test (loss of balance).

What could explain this patient's subacute progressive ataxia, and what are the next steps in the workup?

What's the diagnosis? Turn to page 42 for the answer.

Dr. Edwards is a third-year resident at the Santa Rosa Family Medicine Residency.

Awards Dinner 2016

"Celebrating exemplary service to medicine"

SCMA honored four local physicians and Partnership HealthPlan at the 32nd annual SCMA Awards Dinner in December. The physician honorees were Dr. Jerry Minkoff, Dr. Gary Barth, Dr. Rob Nied and Dr. Veronica Jordan. The dinner, held at the Vintner's Inn in Santa Rosa, attracted almost one hundred physicians, spouses and guests.

Dr. Minkoff, an endocrinologist, received the Outstanding Contribution to Sonoma County Medicine award in recognition of his more than three decades of contributions to the Santa Rosa Family Medicine Residency, improved diabetes care and cardiovascular health initiatives. The award was presented by Dr. Stephen Rich, the former chief of internal medicine at Kaiser Permanente Santa Rosa.

Dr. Barth, an ophthalmologist, received the Outstanding Contribution to the Community award in appreciation of his many years of executive-level contributions to health care organizations, and for his extensive volunteer work as an ophthalmic surgeon and champion of Operation Access, providing critical eye care for those in need. The award was presented by Dr. Loie Sauer, a fellow volunteer for Operation Access.

Dr. Jordan, a family physician, received the Article of the Year award in appreciation of her article "What if primary care was as easy to access as the ED?" which appeared in the spring 2016 issue of *Sonoma Medicine*. The award was presented by Dr. Jeff Sugarman, who chairs the magazine's editorial board.

Partnership HealthPlan, represented by CEO Liz Gibboney, received a Recognition of Achievement award for its efforts to improve access and remove barriers to receiving quality care, and for continuously strengthening and creating community partnerships to keep Sonoma County residents healthy. The award was presented by Sonoma County Deputy Health Officer Dr. Karen Holbrook.

Dr. Nied, a family and sports medicine physician, received the Outstanding Contribution to SCMA award for his exemplary level of commitment and leadership to SCMA through serving on the SCMA Board of Directors and the Health Careers Scholarship Committee, for ensuring individual TPMG physician participation in SCMA, and for working as a delegate to CMA. The award was presented by Dr. Catherine Gutfreund, a past president of SCMA.

At the end of the awards ceremony, Dr. Nied recognized SCMA Executive Director **Cynthia Melody** for her 25 years of service to the medical association and praised her many accomplishments as executive director. Ms. Melody will be leaving SCMA at the end of January to become the practice manager for her son, Dr. Cuyler Goodwin, a Santa Rosa psychiatrist. ◇

Dr. Rob Nied receiving the Outstanding Contribution to SCMA award.

SCMA President Dr. Regina Sullivan and her husband Tim Sullivan.

Dr. Paul Marguglio (left) and Dr. Ron Van Roy.

Dr. Alexandra Korin and her husband Dr. Jan Sonander.

Dr. Catherine Gutfreund and her husband Greg Chatfield.

Outstanding Contribution to the Community: *Dr. Gary Barth and presenter Dr. Loie Sauer.*

Outstanding Contribution to SCMA: *Dr. Rob Nied and presenter Dr. Catherine Gutfreund.*

Outstanding Contribution to Sonoma County Medicine: *Dr. Jerry Minkoff (right) and presenter Dr. Stephen Rich.*

Article of the Year: *Dr. Veronica Jordan and presenter Dr. Jeff Sugarman.*

Recognition of Achievement: *Partnership HealthPlan CEO Liz Gibonney (left) and presenter Dr. Karen Holbrook.*

Lynn Scuri (Partnership HealthPlan), Dr. Marshall Kubota and Dr. Jeff Sugarman.

SCMA Executive Director Cynthia Melody (right) and her daughter Erika Goodwin.

NORCAL Mutual Insurance Co. representatives Jane Mock (left) and Cinfonie Chiu (right) with Cynthia Melody.

A good time was had by all.

— Photos by WB Photography —

SONOMA COUNTY MEDICAL ASSOCIATION

Oct. 26, 2016

Dear SCMA, MMS and MLCMS Boards:

This month I am celebrating 25 years with SCMA . . . time certainly does fly when you are doing what you love. So many years, projects, dinners and events, publications, challenges, changes, achievements and meetings—so many meetings! I'm grateful to have had the opportunity to work with these amazing organizations for many years, and for the privilege of collaborating with many wonderful, dedicated physicians. I believe I've had the best job ever, and thought I would be the executive director who didn't know when to leave. I imagined the boards would have to draw straws to decide who was going to tell me it was time . . . .

But here I am telling you it's time. I'm leaving for the best of reasons though—I've accepted a position as practice manager for a new solo practice in Santa Rosa. My son, Cuyler Goodwin, graduated from the UCSF psychiatry residency program this summer and opened Sequoia Mind Health with a promising future. I am profoundly honored to have this opportunity to help Cuyler, and humbled to have been asked. My last day with SCMA will be Dec. 31, 2016.

While I am looking forward to a new career, I am sad to be leaving. It has been an extraordinary privilege to work for you. I've been honored by your faith in my representing both your interests and those of your patients. Thank you for the opportunity, and for trusting me with that precious responsibility. I have learned much from each of you, and I greatly admire your dedication to your patients, to our communities, to collaboration and to the principles of organized medicine.

Your SCMA staff is without question the best. Every day they demonstrate what loyalty and dedication truly mean, and I could not have achieved half of what we've accomplished without their help. I will miss this extraordinary team.

I want to thank each of our past presidents, all of whom helped guide me for these past 16 years as your executive director. I'd like to especially thank Dr. Paul Marguglio, who was president in 2000 when SCMA was informed it was being shut down with a bankruptcy filing imminent. I will always be in debt to him and the board of directors for believing in me and giving me a deeply appreciated, once-in-a-lifetime opportunity to help rebuild and grow the organization. In 2007, SCMA began providing executive director, administrative and operational services for the Marin Medical Society, and in 2009 for the Mendocino-Lake County Medical Society.

Also, I would like to acknowledge those who served on the three boards of directors during my term—thank you for your support and commitment to your societies.

I close with best wishes for the continued success of your practices and our medical community.

Sincerely,

Cynthia Melody
SCMA Executive Director
1991–2016

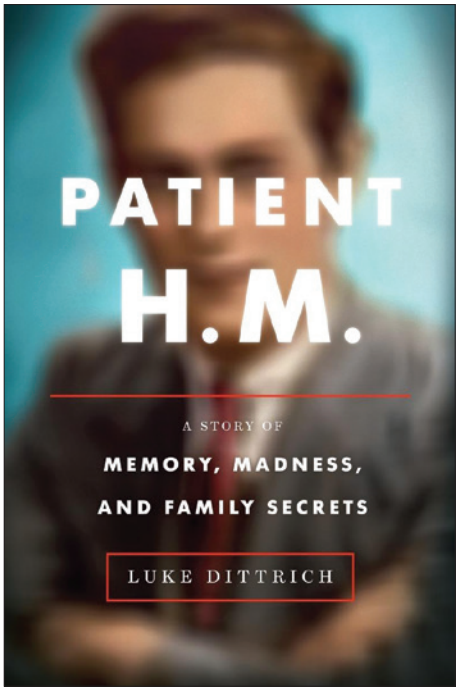
***With the resignation of our long-time executive director at the end of 2016, the SCMA Board of Directors met to consider organizational options for 2017 and beyond. They voted to discontinue managing other county medical societies and have appointed a Search Committee to facilitate the hiring process with the CMA Component Medical Society Services. We hope to announce the new executive director by Feb. 1, 2017. Updates will follow via* News Briefs.**

▪ Regina Sullivan, SCMA President

A Study in Arrogance

Allan Bernstein, MD

Patient H.M.: A Story of Memory, Madness. and Family Secrets, Luke Dittrich, 464 pages, Random House (2016).



Patient H.M., by Luke Dittrich, traces the history of Henry Molaison, a patient who underwent brain surgery for epilepsy as a young man in 1953, soon lost his ability to form new memories, and became a test subject for the next 50 years. He was regarded by some scientists as a lab rat who could talk.

The surgeon involved, Dr. William Scoville, is Dittrich's grandfather. This relationship gives Dittrich a unique window into how family dynamics influenced Dr. Scoville to go from the usual realm of neurosurgery (e.g., repairing spinal discs, removing blood clots and tumors) to trying to cure mental illness by cutting out parts of the brain. Dr. Scoville became a psychosurgeon.

Dittrich begins with a review of seizures and how they were localized to the brain. He describes people who had brain injuries that changed their behavior, forming the basis of how we understand functional anatomy: "The dead teach the living."

The book takes a darker turn as the narrative brings us to the mental hospitals of the 1930s, 40s and 50s. Patients were committed to these facilities for conditions ranging from psychosis and depression to what was called "abnormal behavior," such as oppositional defiance and homosexuality. Treatments available were minimal and, in retrospect, outright dangerous. They included hyperthermia, hypothermia, insulin shock and electric shock, often without anesthesia. Outcomes were predictably poor.

A series of experiments on monkeys in 1935 showed that cutting the inferior portions of the monkeys' frontal lobes reduced their aggressive behavior and made them easier to test. The procedure was soon applied to humans in 1936 and published in a French medical journal as "The Possibilities of Surgery for the Treatment of Certain Psychoses." Surgery worked, sort of. Lobotomy, which cut the connections of the frontal lobe to the rest of the brain, became a treatment of choice throughout the country for "difficult" patients (as in *One Flew Over the Cuckoo's Nest*), often performed by psychiatrists or neurologists. A Lobotomobile travelled across the country teaching local physicians how to perform the procedure. Most of these physicians had no formal surgical training.

Enter Dr. Scoville, the highly regarded neurosurgeon who believed that he could do brain surgery better. His patients had fewer complications and more reproducible outcomes. Taking out pieces of healthy brain was now acceptable. He did it every day.

Patient HM wasn't in a mental hospital. Instead, he had refractory seizures. The field of surgery for seizures had been developed earlier in Montreal, where it would only be performed if there was a definitive structural lesion or a focal EEG abnormality. HM had neither. Dr. Scoville didn't seem to worry about things like that. Those Canadians were too conservative. He planned to remove pieces from both sides of HM's temporal lobes. That way he would be sure to get the likely focus of the seizures.

The surgery was a success. Patient HM recovered and his seizures were reduced. Unfortunately, he was now totally disabled due to an inability to form new memories.

Dr. Bernstein, a Sebastopol neurologist, serves on the SCMA Editorial Board.

MYSTERY CASE SOLUTION

The differential diagnosis for ataxia is broad and includes metabolic, infectious, vascular, malignant and toxic etiologies. Cerebellar infarcts and hemorrhages are associated with acute ataxias. Hypothyroidism and hypoparathyroidism, when left untreated, can lead to gait instability. Many medications can cause ataxia—most commonly antiepileptic drugs—but metformin is not among them. Further down the differential, atypical infectious agents such as JC virus and prion diseases may also present with ataxia. Diabetic neuropathy can cause ataxia as well, either through autonomic dysregulation or sensorimotor neuropathy.

Given Victor's complaint of disequilibrium, coupled with his history of stroke, I was initially concerned that he had suffered an infarct of his posterior circulation. However, he lacked other cerebellar signs and had motor and sensory deficits that could not be explained by a cerebellar lesion; also, the subacute and progressive nature of his presentation did not fit with this diagnosis. Neither could a metabolic or infectious etiology explain a focal motor deficit, and his lower extremity weakness was significantly more pronounced on the left. Nonetheless, I checked some labs: his TSH and CMP were normal, and his RPR was negative. His ataxia and sensory changes also couldn't be explained by diabetic neuropathy. The progression was too rapid, and his lower extremities were relatively hyper-reflexive on exam, which pointed toward an upper motor neuron lesion.

I knew that imaging was the next step in diagnosis, but where to focus the search? No single lesion in the brain could account for his presentation. The defect had to be in his spinal column, where impingement on the dorsal columns could cause a sensory deficit as well as disequilibrium from loss of proprioception, and damage to the corticospinal tracts could cause a motor deficit.

Ultimately, the MRI of his cervical and thoracic spine identified the source of his symptoms: an enhancing intradural, extra-medullary mass in the posterior spinal canal at T2 that was causing severe cord compression. He underwent a laminectomy and removal of the mass, which subsequently proved to be a grade I meningioma.

Meningiomas are the most common tumor of the central nervous system and can arise anywhere in the dura, although most are intracranial. Only about 10% of these tumors arise in the spine, as in this case. Most meningiomas arise spontaneously, are nonmalignant and can be asymptomatic for years. It was fortunate that Victor developed his gait ataxia between follow-up visits, so that his tumor could be removed before any irreversible damage was done. Postoperatively, he did exceptionally well. His presenting symptoms have since resolved, and he is back to walking a mile every day with his wife. ◇

Email: edwardsa@sutterhealth.org

HM became the focus of a number of psychologists intent on defining how memory works, by endlessly testing HM and comparing him to others with different injuries. He became the "property" of psychologist Suzanne Corkin at MIT, who would not let anyone test him without her approval. As HM had no close relatives, she got a "power of attorney" from a distant relative and used that as her legal basis for "owning" HM and all the data she acquired about him. After HM died, she went to court to control all access to his brain tissue, so only she could continue to publish about what happened to HM's memory after the surgery.

The Nuremburg trials after World War II documented the horrors of human experimentation on subjects who had no ability to resist. The first principle of the Nuremberg Code, a set of 10 research principles issued after the trials, states, "Required is the voluntary, well informed, understanding consent of the human subject in full legal capacity." Yet, well after these guidelines were written, there was no attempt to get consent from the subjects undergoing lobotomies and other destructive procedures. Prisoners had more rights than patients in mental hospitals.

There is arrogance in believing that we can change behavior we don't agree with by taking out a piece of someone's brain. It hasn't worked in lobotomies. An attempt by Dr. Vernon Mark to change violent behavior surgically also failed, but at least informed consent was obtained.[1] Dr. Corkin's failure to share her data with Dittrich when he was writing *Patient HM* comes across as arrogance, but her academic colleagues still defend her scientific integrity, if not her methodology. Memory remains a mystery.

Patient HM has its weak spots and loses focus at times. Long interviews with HM are redundant. Still, the book presents a frightening picture of pseudoscience run amok when "just do something" was considered appropriate in dealing with patients who had no way to resist. Psychosurgery is a grim chapter in the annals of psychiatry, neurology and neurosurgery. Physicians would do well to review their Hippocratic Oath: First do no harm. ◇

Send comments to osborn53@sonic.net.

Note: *I attended a number of Dr. Scoville's lectures on spinal surgery while I was a resident physician in Boston. He never mentioned his psychosurgery background. As a resident, I also took care of Dr. Mark's violent patients. Dr. Michael Crichton's bestselling book* Terminal Man *is based on one of the patients we shared. Dr. Crichton left Boston as I arrived, so I got the end of the story. He made up another ending and reaped millions.*

Reference

1. Mark V, Ervin F, *Violence and the Brain*, Harper & Row (1970).

NEW MEMBERS

NORTHERN CALIFORNIA MEDICAL ASSOCIATES

Ashwani Bedi, MD, Cardiac Electrophysiology, 3536 Mendocino Ave. #200, Santa Rosa, Punjabi Univ

Brian Stater, MD, Otolaryngology, 1701 4th St. #120, Santa Rosa, Columbia Univ

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Christopher Trebino, MD, Diagnostic Radiology, New York Med Coll 2009

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William Elder Jr., MD, Family Medicine, Wright State Univ 2016

Martin Escandon, MD, Family Medicine, UC San Francisco 2016

Rhianon Liu, MD, Family Medicine, Johns Hopkins Univ 2016

Dorothy Marshall, MD, Family Medicine, Univ Miami 2016

Brendan Payne, MD, Family Medicine, Univ North Carolina 2016

Courtney Stewart, MD, Family Medicine, Univ Rochester 2016

Joe Stewart, MD, Family Medicine, Univ Rochester 2016

Eric Wilson, MD, Family Medicine, Univ Iowa 2016

Danielle Wisniewski, MD, Family Medicine, Tulane Univ 2016

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Peter Valenzuela, MD, Family Medicine*, 717 Center St., Healdsburg, Univ Texas

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Anisa Durand, MD, Pediatrics*, UC Davis 2012

Michelle Gavin, DO, Family Medicine*, Western Univ 2013

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Shyam Goverdhana, MD, Family Medicine*, St. George's Univ 2009

Christopher George, MD, Occupational Medicine, Temple Univ 2011

Stephen Gregorius, MD, Orthopaedic Surgery*, Loma Linda Univ 2006

Shazneen Hushmendy, DO, Obstetrics & Gynecology, New York Coll Osteo Med 2012

Jacqueline Kelly, MD, Internal Medicine, Ross Univ 2013

Tamara Kelly ,MD, Obstetrics & Gynecology, Ross Univ 2010

Jahanzeb Khan, MD, Psychiatry, Baqai Med Univ 2002

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Tara Kulkarni, DO, Family Medicine, New York Coll Osteo Med 2013

Lisa Montgomery, MD, Family Medicine*, Texas Tech Univ 2013

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An Inspiring Way to Treat the Post-Holiday Blues

Patty Lyn Tweten

"Peaceful Hearts," by Banksy (San Francisco). *Photo by Thomas Hawk.*

January has a "holiday hangover" feel to it. After people make their New Year's resolutions, they have a tendency to plunge into the daily grind with barely a backwards glance. As children, we learned that looking back on the holidays is depressing. For a moment, our hearts were filled with joy. Then the joy deflated like a punctured balloon. Living in the moment has no place in our grown-up January lives, and the urgency of tasks we've put off for weeks has a magnetic attraction. Many of us use this time to take care of our physical hearts with a few extra trips to the gym; but our emotional hearts are still mired in the blues.

The Sonoma County Medical Association Alliance Foundation wants to help you exorcise those post-holiday blues by opening your heart to the many physical and emotional benefits of creating something wonderful—a heart image—and giving it away.

The heart image is ubiquitous and has been present in art since prehistoric times. Its shape of two mirror-imaged lobes is simple, but one need only observe the variety of heart emoticons in a smartphone to see how nuanced

Ms. Tweten is vice president for marketing and communications for the SCMAAF.

and complex its meaning can be. Whether the heart symbol was initially used to represent a physical heart, or the emotional and spiritual center of the body, it has become an icon of romantic, filial or brotherly love. That is why the SCMAAF Garden Tour Committee has chosen to sell paintings of hearts at this spring's Garden Tour, our 25th. The paintings will serve as a visual representation of our mission to improve the lives of those in need.

The Everyone Has a Heart campaign is a key element of the Garden Tour's 25th anniversary. We're asking members of our medical community, or their family members, to fill a canvas with an image of a heart. Any medium can be used: drawing, collage, painting, photography, or whatever moves you. The only requirement is that your magnum opus fit on the 8" x 8" canvas that we provide. The heart images will be sold during this spring's Garden Tour for $50 each.

In its history, the Garden Tour has raised over a half-million dollars and benefitted almost 70 programs for several dozen nonprofit organizations in Sonoma County. This year's tour, set for May 19-20, will focus on gardens in the Santa Rosa area, and we expect about a thousand visitors. All proceeds will benefit SCMAAF charity programs and our six community beneficiary partners. In addition to ticket sales and sponsorships, the heart canvas sales will help The Garden Tour Committee capture some of the $90,000 we hope to raise at this year's event.

No prior art experience is required to participate in the Everyone Has a Heart campaign, but physicians already have the skills necessary to participate in this effort. They are inherently creative people—one could even say they are artists when it comes to diagnosing and treating patients. In the book *The Art of JAMA*, editor Dr. Therese Southgate notes the similarity between physicians and artists: "Observation is not merely data collection such as any computer can record. It is not merely looking, it is seeing. It is not only listening, it is hearing. Its task is to enable the artist to complete what nature has not."

That's why we are asking YOU to help. Let loose the child inside of you and live in the moment by painting or drawing something by hand. In art there are no mistakes. You can let yourself go and be absorbed by the act of creation. By doing so, you will earn the heart-warming knowledge that, through using your healing hands in a different way, you have helped a number of nonprofit organizations across Sonoma County. That knowledge might even help you kick the New Year's Blues to the curb. ◇

To participate in the Everyone Has a Heart campaign, contact Lynn Davis at 707-539-7008 or lynn@lynncdavis.com. The canvas will be delivered to you. All final pieces must be received by April 21.

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THEY SUPPORT THE MAGAZINE!

SCMAAF Programs:

Health Promotions' JourneySafe: Program for young drivers about the impact of distracted driving.

Safe Schools: Bullying and violence prevention programs for Sonoma County Schools.

Health Careers Scholarship: Scholarships for students pursuing a career in medicine or allied health professions.

Foster Children's Give-A-Gift: Holiday gifts for foster youth and laptop computers for transitional age foster youth pursuing higher education.

Community Beneficiary Partners:

Community Action Partnership of Sonoma County: Supports the Save Our Smiles program for uninsured and underinsured children.

Hope Counseling: Augments free and low-cost mental health counseling services for low-income children, families and senior citizens.

LifeWorks of Sonoma County: Provides staff and materials for year-long art and music therapy program for 40 special education students in the Santa Rosa and Cloverdale school districts.

Redwood Empire Food Bank: Supplies foods rich in iron and vitamin C to combat anemia and obesity in low-income children.

The Living Room Center: Provides on-site Marriage & Family Therapist mental health services to increase likelihood of participation in such therapy.

Verity: Supports programs for local high schools on sexual assault prevention and what to do if assaulted.

SOLO and SMALL GROUP PRACTICE RESOURCES

WWW.CMANET.ORG/RESOURCES/REIMBURSEMENT-ASSISTANCE/

CALIFORNIA MEDICAL ASSOCIATION

CMA's **Center for Economic Services** (CES) offers resources and guidance to improve the success of your practice. Assistance ranges from coaching and education to direct intervention with payors or regulators. Access to CMA's practice management experts is a members-only benefit.

The information on these pages is excerpted from the CES web pages at **www.cmanet.org/resources/reimbursement-assistance/.**

REIMBURSEMENT ASSISTANCE

Having Payor Problems? Need Help?

Members contact CMA's reimbursement helpline, at **888-401-5911** or **economicservices@cmanet.org.**

CMA's Center for Economic Services (CES) is staffed by practice management experts with a combined experience of over 125 years in medical practice operations. Our goal is to empower physician practices by providing resources and guidance to improve the success of your practice. In the past three years, CES successfully recouped over $7 million from insurance companies on behalf of our physician members.

WHEN DO I CALL CMA?

CMA members can call on CMA's practice management experts for free one-on-one help with contracting, billing, and payment problems. If you answer "yes" to any of the following questions, it might be time to call for help.

- Are your claims not being paid in a timely manner?
- Are you not being paid according to your contract?
- Are your claims being denied after obtaining prior authorization or verifying eligibility?
- Are you receiving unreasonable requests for medical records or untimely requests for refunds?
- Are you having difficulty obtaining fee schedules and/or payment rules?
- Are your claims being denied for timely filing?
- Have you been presented with a managed care contract and you're not sure if the terms are consistent with California law?
- Have you done everything you can to resolve an issue with a payor, including appealing, and have been unsuccessful in getting the payor to resolve the issue?

PRACTICE MANAGEMENT TOOLS AND RESOURCES

Whether it's identifying and fighting unfair payment practices, improving the efficiency of your practice, or negotiating payor contracts, CMA has tools and resources to help.

TOOLKITS

- Ask the Expert: Billing Medi-Medi patients
- MACRA: What Should I Do Now to Prepare? A checklist for physician practices
- What Physicians Need to Know to Avoid Penalties Under the New Provider Directory Accuracy Law
- Meaningful Use Hardship Exception FAQs
- Surviving ICD-10: An FAQ for physician practices
- ICD-10 Transition Guide—What physicians need to know
- Updating Provider Demographic Information with Payors
- Medicare Incentive and Penalty Programs: What physicians need to know
- Cal MediConnect Physician FAQ: What you need to know about keeping your patients and billing for the dual eligible population
- A Physician's Guide to Implementation of SB 866: The new standardized prescription drug prior authorization form
- Surviving Covered California (several titles)
- Medi-Cal Survival Guide: Important Changes and What They Mean to Your Practice
- Medicare Transition Guide: What physicians need to know
- Medi-Cal Primary Care Physician Rate Increase FAQs
- CMA's Got You Covered: A physician's guide to Covered California, the state's health benefit exchange
- TRICARE Transition Guide: What physicians need to know
- Aetna Termination Resource Guide
- Taking Charge: A step by step guide to evaluate and prepare for negotiations with managed care payors
- Best Practices: A Guide for Improving the Efficiency and Quality of Your Practice
- CMA Balance Billing Advocacy Tool Kit
- Medicare Enrollment Guide for Individual Physicians

PUBLICATIONS

- ***CMA Practice Resources*** (CPR)

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- Know Your Rights: Timeframes to Appeal
- Know Your Rights: Quick Guide for Appeals
- Know Your Rights: Identify and Report Unfair Payment Practices
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- Blue Shield Contract Analysis
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SAMPLE LETTERS, CHECKLISTS & WORKSHEETS

- Financial Impact Worksheet
- Payor Solvency Checklist
- Sample Tracking Sheet: Health Plan Acknowledgement of Receipt of Claim
- Sample Termination Letter - Patient
- Sample Termination Letter - Material Modification to Contract
- Sample Letter - Request for Complete Fee Schedule and Detailed Payment Rules
- Sample Letter - Request for Copy of Signed and Executed Contract, Complete Fee Schedule and Detailed Payment Rules
- A/R Phone Call Follow up Log Template

OTHER RESOURCES

- Special Investigations Unit Audit Guide
- CMA Timely Access Guide
- Medicare Electronic Prescribing (eRx) Overview
- Patient Handout: FAQ About Accountable Care Organizations (ACOs)
- Heritage California Accountable Care Organization (ACO) Physician Frequently Asked Questions
- Medicare Audit Guide for Physicians

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Mental Illness During Pregnancy

Regina Sullivan, MD

A pregnant patient with schizophrenia presents to the emergency department with a psychotic episode. Although her pregnancy is medically stable, she needs to be treated acutely for the psychotic/psychiatric illness in a psychiatric unit. Given her pregnancy, several psychiatric facilities decline to accept her. Given her psychiatric disorder, the medicine and obstetrics floors are also reluctant to accept her because they are not equipped to handle psychiatric illness. The patient is left in limbo while the search continues for an appropriate placement; in other words, her normal pregnancy complicates her psychiatric care.

The disabling nature of neuropsychiatric disease is commonly due to chronic symptoms of depression and other mental disorders, such as addiction and psychoses. Mental disorders increase the risk of disease and can contribute to both intentional and unintentional injury. Conversely, many health conditions increase the risks of mental disorder, and co-morbidity complicates diagnosis, treatment and prognosis. Mental disorders affect nearly 50% of people at least once in their lifetime; additionally at least 20% of the population is acutely affected by at least one mental disorder.[1]

Psychiatric illness affects a half million pregnancies in the U.S. every year.[2] Such illness can arise at the first onset of pregnancy or can be exacerbated by pregnancy's significant physiologic and psychosocial changes. Untreated maternal psychiatric illness can significantly affect prenatal care, resulting in poor compliance, inadequate nutrition, exposure to pharmaceuticals or herbal remedies, increased alcohol and/or tobacco use, deficits in mother-infant bonding, and disruption within the family environment.

Major depression is the most significant mood disorder in the United States, with prevalence at 17% in the general population and higher in adolescent and young adult females.[2] The highest rates of maternal depression occur in women with unresolved feelings about the pregnancy and fatigue after birth. Untreated maternal depression is associated with an increase in adverse pregnancy outcomes, such as premature birth, growth restriction and comorbidities. Maternal depression also increases the risk of newborns who cry more frequently and are more difficult to console, and it is associated with decreased social support and increased stress, smoking, and alcohol and drug use.

Bipolar affective disorder, a combination of a major depressive disorder with manic symptoms, affects 4–6% of American men and women. Rate of relapse with postpartum psychosis can be as high as 50%.[2]

Collectively, **anxiety disorders** are the most common psychiatric disorder, with a prevalence of 18% among Americans 18 years and older.[2] Anxiety disorders can lead a pregnant patient to worry needlessly to an obsessive degree. This interferes with sleep, relaxation and concentration, and it increases fatigue and irritability. This in turn results in repetitive prolonged office visits or the other extreme, noncompliance. Preterm delivery, spontaneous abortion and fetal distress are potential complications of anxiety disorders in pregnancy.

Schizophrenic disorder occurs in approximately 1–2% of women, with the most common age of onset during the childbearing years.[2] Schizophrenia is a severe and persistent mental illness, and it can have devastating effects on both mother and child, leading to events such as denial of pregnancy, refusal of prenatal care, and infanticide.

Historically, the care and management of pregnant women with psychiatric illness has been a complex issue. Obstetricians are primary care providers for women, but they are not psychiatrists, and psychiatrists are not obstetricians: there are challenges for both.[3] Given the comorbidities of other medical conditions, the potential teratogenic risk of psychotropic medications, and the risk of perinatal syndromes and neonatal toxicity, the picture becomes even more complex.

Team-based care with shared decision making among the obstetrician, psychiatrist, primary care physician, pediatrician, pharmacist, nurses, staff and patient can facilitate optimal care. The core challenge is the implementation and coordination of care. Clinical management should incorporate a balance between maternal well-being (the potential negative effect of untreated psychiatric illness) with the clinical consequence of the newborn's exposure to medication and the available alternative therapies. Mapping out a specific plan of care that can be formulated into a workflow provides an increase in quality of care in a timely and appropriate manner.

The pregnant patient mentioned above was transferred to the obstetrics unit, and a multidisciplinary team coordinated her care with a favorable outcome. ◇

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(References appear on page 20.)

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